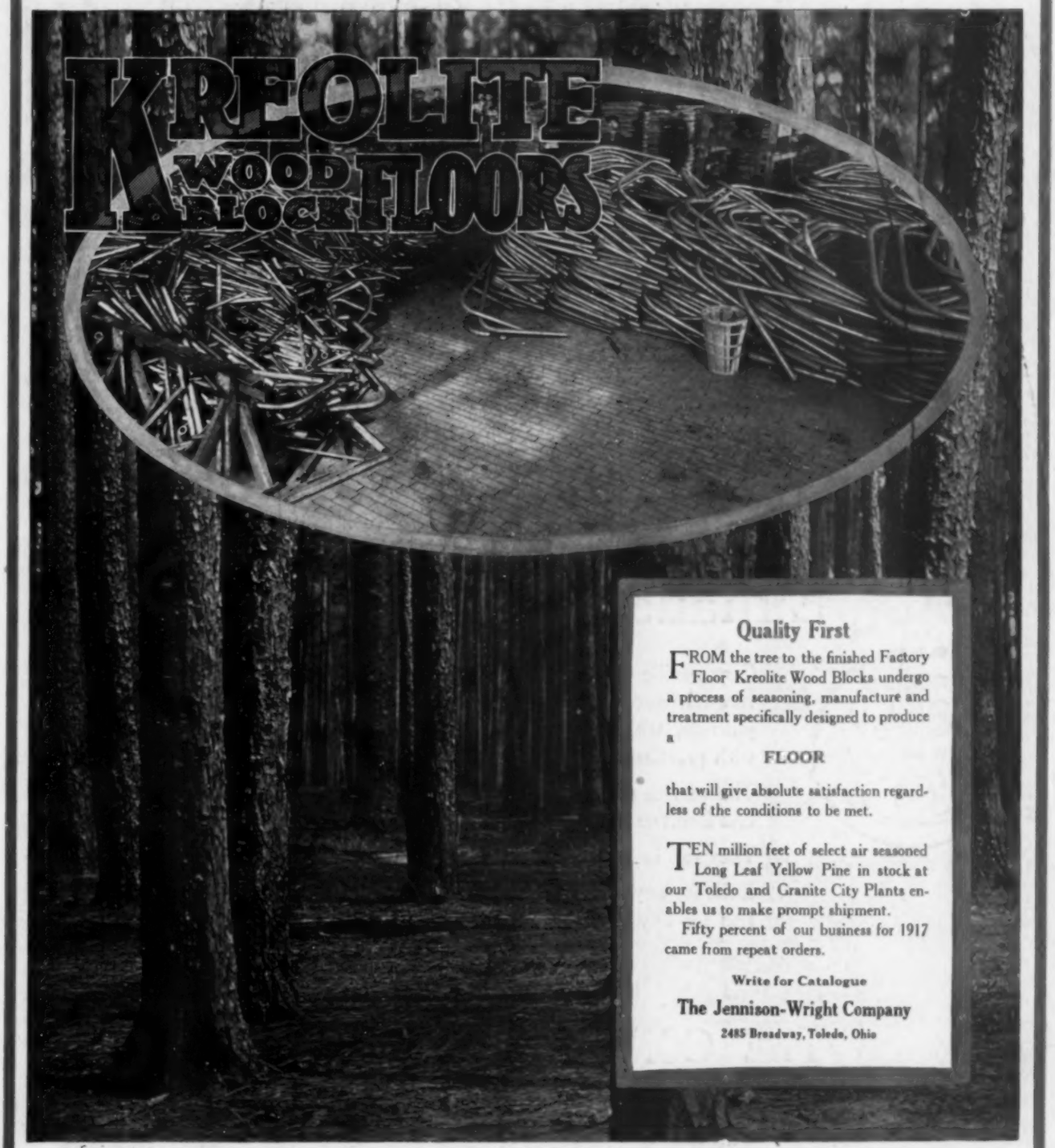
THE IRON TRADE REVIEW

Published Weekly
Vol. LXIII No. 2

CLEVELAND, JULY 11, 1918

Entered as second class matter at the postoffice at Cleveland, Ohio, under the act of March 3, 1879

Four Dollars a Year
Single Copies 15 Cents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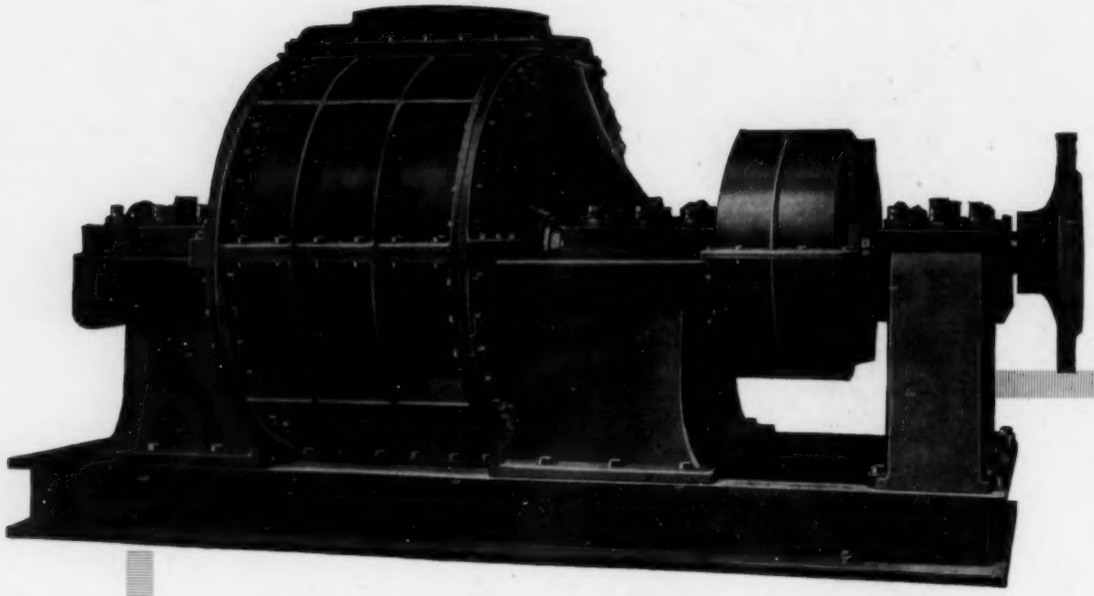

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THE IRON TRADE REVIEW

Vol. LXIII Cleveland, July 11, 1918 *No. 2*

Place Responsibility on Producers

Government's Comprehensive Instructions to Industry Signify Freer Initiative of Makers in Distribution is Sought—Priority Certificate Situation Further Clarified—Rail Price Action Awaited—Steel Operations Running High

CHIEF responsibility for the equitable and efficient satisfaction of war demands in iron and steel has been put by the government upon the producers themselves. This is the controlling policy to be drawn from the complete and lucid instructions to buyers and sellers issued jointly by the priorities commissioner and the steel director. The much-misunderstood form and principles of the government plan of priority and preferential distribution have been made plain by the announcement. As a result much of the misapprehension and confusion which had been retarding the quick movement of materials has been removed. Shipments in various directions have been materially expedited. A few producers, however, are awaiting the receipt of the formal notification before abandoning their requirement that all orders shall be accompanied by priority certificate.

There is a strong suggestion that the government in the interests of more practical results has seen fit to modify some of its earlier ideas on the rigid control of shipments. Its repetition that priority certificates in most cases are not needed and will not be issued is significant. Blanket authority given by the steel director to the mills to ship small lots to consumers in nonwar lines scarcely means that more tonnage for the open market is in sight, but it does denote the increasing freedom of action being given the producers. Jobbers have been shown how and when they may replenish their stocks and they now are receiving more tonnage.

Rail Price is Unsettled

Prices on standard rails and certain other products were not formally acted upon at the Washington conference during the week as had been expected. These matters will come up at another conference this week. It is learned that certain of the mills already have booked a large tonnage of rails at $55, mill, for bessemer and $57 for open hearth. The precedent for these prices was created when certain transactions in which the government was directly interested were closed some time ago. The mills now are being interrogated as to the tonnage on their books and the possibilities for early production, preliminary to the distribution of the orders for 1,500,000 to 2,000,000 tons for domestic roads.

No Action on Iron Price

It is apparent there is to be no immediate action on any of the proposed price modifications in pig iron to relieve higher-cost producers. The matter still is undergoing investigation. Allocations of the week total 36,000 tons. Allotment of the 180,000 tons of basic for England has not been formally made, although it is well understood that a large producer in Ohio, western Pennsylvania and New York is to receive a heavy tonnage and the remainder will go to the south. Two Alabama makers are credited with the assignment of 30,000 tons each. Buying of iron for 1919 delivery is increasing at Chicago, at Pittsburgh and in other central districts.

Steel Output Increased

Steel ingot production has continued to average close to 3,500,000 tons monthly according to the statistics for June compiled by the American Iron and Steel institute. This is approximating the industry's best record in 1916. The first six months of the present year, however, show a slump of about 2,000,000 tons below the preceding six months, due to the heavy losses sustained during the period of freight congestion in January and February. Steel corporation operations of 93 per cent in pig iron and of 95 per cent in steel ingots representing a practical maximum activity, are indicative of the general high level of present production.

Gray iron hand grenades distributed among various foundries to date aggregate approximately 28,000,000. Experiments also are being conducted to reclaim by heat treatment a large number of hand grenades previously made of malleable iron. Malleable rifle grenades continue to be produced.

JULY 11, 1918

THE IRON TRADE REVIEW

A weekly publication devoted to the Iron, Steel, Foundry and Metalworking Industries.

Published Every Thursday by
THE PENTON PUBLISHING CO., Cleveland

BRANCH OFFICES

CHICAGO - - - - - 1147 Peoples Gas Bldg.
CINCINNATI - - - - - - 128 Opera Place
NEW YORK - - - - - - 508 West St. Bldg.
PHILADELPHIA - - - - 1316 Land Title Bldg.
PITTSBURGH - - - - - 2148-49 Oliver Bldg.
WASHINGTON, D. C. - - - 40 Metzerott Bldg.
BIRMINGHAM, ENG. - - - Prince's Chambers

Subscription, United States and Mexico, $4 per year. Canada, $6, and other Foreign Countries, $8 per year.

Entered at the Postoffice at Cleveland as Second Class Matter

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Joint Declaration by Steel Director and Priorities Commissioner Explains Full Plan of Government Distribution—Clears Up Confusion Over Priorities—Jobbers' Position Defined—Blanket Authority Given to Ship Small Surplus Lots.

Exporters Face Hard Problem

STEEL export merchants are wondering what is the government's attitude toward their own particular industry. None of the recent proclamations has referred specifically to the export merchant, thus leaving him to the conclusion that he is regarded as a nonessential. In fact, he does not know whether any attempt on his part to do business would be considered as contrary to the administration's desires.

The shortage of steel, coupled with a shortage of shipping, has reduced the business of the steel export merchant to a minimum. He is still able to do some business, but, as a rule, he is far from paying expenses. Some of the smaller export houses have gone out of business. Others, better able to withstand the present slack period, are merely waiting. But they are wondering whether the present situation is going to exist only for the next few months, or whether it will continue until the end of the war. Some of the strongest houses probably would discontinue business, at least temporarily, if they felt there would be no change this year. But they have built up extensive organizations in this country and abroad, and have developed an invaluable asset in the shape of good-wills in the foreign markets, representing a large monetary investment. Naturally they are reluctant to give over these hard-won advantages unless there is no other course. Yet they have no means of determining the future.

The maintenance of our army in France, already numbering over a million, and growing steadily, is increasing the demands upon shipping and prospects are that it will be many months before American vessels slip into the water in sufficient tonnage to release increased tonnage for foreign trade. The steel situation is equally problematical. Steel Director Replogle about June 1 said orders for the government and allies on hand totaled 16,800,000 tons, which was equivalent to the country's output of finished products for the remainder of the year. On June 6 the steel industry agreed with the war industries board that it would not make or market a ton of iron or steel unless it fell within the strictly war classes, except when such transaction had first been ratified by the proper government officials.

The iron and steel trade is now 100 per cent a war industry. A vast amount of material is being used for construction purposes, for building shipyards, ordnance plants, and a long list of other demands. This construction, when finally completed, will cease to consume steel. But the consumption of steel in the form of ships, ordnance shells and the like, after the completion of the plants, is a factor which the export trade cannot even attempt to determine. There are some export merchants who, if they could answer these questions, would decide at once as to continuance of their business. In the meantime, they are earnestly looking to the government for some expression which will serve to guide them in their present dilemma.

The New Price Booklet

THE co-operative work of the war industries board and the American Iron and Steel institute in rounding out a complete schedule of base prices, differentials and extras in iron and steel products has been one of the notable achievements of the regime of federal control. It has required months of painstaking and careful effort, to harmonize and adjust all extras, differentials, conditions of sale, foot notes, etc., in the various products in conformity with the new situation. What an advanced and complete stage this work now has reached is illustrated by the new price booklet revised and amplified to bring it strictly to date, which has just been issued by THE IRON TRADE REVIEW. Practically all the important schedules now are in final form and it may be said with truth that the building up of a solid and complete price structure in iron and steel today is a finished achievement.

The adjustments and revisions that have been necessary to bring this about, however, have been numerous. Since the first IRON TRADE REVIEW book-

let was issued six months ago scarcely a major product has escaped some change or amplification, the need of which has been demonstrated by the test of practical experience.

The new booklet is the most complete of its kind ever issued. Furthermore it is the only one in existence which embraces all schedules as they are now in effect. Every buyer or seller of iron and steel needs a copy on his desk for his constant guide and reference.

Wiping Out a Price Inequality

CHANGED conditions bring about unexpected actions and the viewpoint often is altered when least expected. A case in point recently was the abolition of the short-lived Chicago basing point on some items of finished steel. For many years Chicago steel mills enjoyed an advantage over those further east of selling f.o.b. Chicago at the Pittsburgh mill price plus freight from Pittsburgh, ranging from 16 to 22 cents per 100 pounds, a tidy additional sum where costs are equal. This fact also gave the western mill the opportunity to attract business by a lower quotation than could be made by Pittsburgh mills and in slack times aided much in filling order books in competition with active producers further east.

Last fall, inadvertently perhaps, Chicago was made a basing point on plates, shapes and bars, on an equality with Pittsburgh. Western mills did not relish this situation but made no protest. Then with all mills burdened with orders and western makers loaded most heavily, because of the great demand for ship material for Pacific coast shipyards, eastern mills began to be called on by the government to ship material west.

Under this condition on material coming from Pittsburgh for western delivery, the buyer demanded a quotation on the Chicago basis whenever it was to his advantage to have it. This made it necessary for the mill to pay the freight as far as Chicago. Manifestly this was an inequality that the government originally had not intended or had foreseen. The inadvertence of the double basing point was corrected when prices were reconsidered for third quarter selling.

In view of efforts to establish other basing points the experience is illuminating and carries its lesson.

The Spirit of 1918

EVASION of individual responsibility is impossible under war conditions. The public conscience reinforced by the active machinery of social and business relations brings home to every one of us our personal duty in the war. This spirit is ever more apparent as the conflict advances. In keeping with this motive which governs the individual, a new tendency is evident throughout the industrial world. That commodity called service is being more freely offered wherever goods are sold.

In the machinery lines, this spirit born of the common interest of win-the-war and fostered by the cares of providing tools for munitions is increasingly evident. One large manufacturer who specializes in one type of equipment sent to each salesman a statement which typifies the creed of service. In this the salesman is instructed to disregard the interests of firm which he represents if those interests conflict in the slightest with the purchaser's best efforts toward winning the war. If, for example, a munitions factory requests a salesman for this firm to call with a view to purchasing his machine, and if the salesman finds that present shop equipment can be made to serve the purpose desired, he is under instruction from his employer to suggest this fact, and thus practically kill his own sale. Further, this machine tool builder has authorized his salesmen to render personal service in devising shop arrangement, advising operations, and changes which may result in greater production, even though the beneficiary is not a user of the salesman's own machine. And finally, without any urging upon the part of the government, this builder has taken upon himself the duty of so assuring himself of the nature of the work for which his machine is purchased, that he knows that each unit shipped goes into service on actual war essentials.

Among machine tool dealers, this spirit of service is evident through co-operation. The broad gage dealer realizes that he is first of all a procurement agent for the government. His knowledge of the business permits him to be able to direct the different agencies engaged in securing needed machines, which under present conditions are vital to production.

The all-absorbing demands of war and the surge of patriotism, more and more are relegating personal interest, whether it be of individual or corporation to a secondary consideration. On the day when final accounts are squared, and true Americanism is measured by its deeds, the self-willed sacrifices of many business men will add a chapter of their own to the new record of national fibre.

Loss of Steel Production

STEEL ingot production for the first six months of 1918 has been running at slightly less than 39,000,000 gross tons annually as compared with approximately 40,800,000 tons during the preceding six months. These estimates are based upon the statistics compiled by the American Iron and Steel institute.

The production figures reflect the 1,000,000-ton monthly loss sustained during the winter months especially January and February, due to the paralysis of freight traffic. Since then production has improved materially but still is far short of the prewar record of 1916.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 122

PIG IRON

Bessemer, valley	$35.20
Bessemer, Pittsburgh	36.50
Basic, Pittsburgh	33.40
Basic, eastern Pa.	32.00
Basic, Buffalo	32.00
Malleable, Pittsburgh	34.90
Malleable, Chicago	33.50
Malleable, Buffalo	33.50

GOVERNMENT SCHEDULE

1.75 to 2.25 silicon (No. 2 foundry, No. 2 plain, and No. 3 southern), $33 furnace base.

2.25 to 2.75 silicon (No. 2X, No. 1 Northern foundry, and No. 2 southern), base plus 50c.

2.75 to 3.25 silicon (No. 1X, No. 2, soft), base plus $1.50.

Over 3.25 silicon, $34.50, plus $1.00 for each ½ per cent of silicon.

No. 1X, Phila.	35.25 to 35.50
No. 2 foundry, Pittsburgh	34.40
No. 2 foundry, Cleveland	33.00
No. 2 foundry, Ironton	33.00
No. 1 foundry, Chicago	33.50
No. 2 foundry, Chicago	33.00
No. 2X foundry, Phila.	34.25 to 34.50
No. 2X foundry, N. J. tide	34.25 to 34.50
No. 2X foundry, Buffalo	33.50
No. 2 plain, Philadelphia	33.75 to 34.00
No. 2 plain, N. J. tide	33.75 to 34.00
No. 2 southern Birmingham	33.00 to 33.50
No. 2 southern, Cincinnati	37.10
No. 2 southern, Chicago	38.50
No. 2 southern, Phila.	40.10
No. 2 southern, Cleveland	38.50
No. 2 southern, Boston	41.00
No. 2 southern, St. Louis	39.75
Virginia, No. 2X, furnace	33.50
Virginia, No. 2X, Phila.	37.60
Virginia, No. 2X, Jersey City	37.90
Virginia, No. 2X, Boston	38.20
Gray forge, Pittsburgh	33.40
Silveries, 8 per cent, furnace	45.50
Silveries, 8 per cent, Chicago	48.50
Low phos. standard, Phila.	56.00
Low phos. Lebanon, furnace	50.00 to 52.00
Low phos., Pittsburgh standard	54.40
Charcoal, Superior, Chicago	37.70 to 38.00
Charcoal, Superior, Buffalo	37.50
Charcoal, southern to 2 per cent silicon	43.00

COKE

(At the ovens)

Connellsville furnace	$6.00
Connellsville foundry	7.00
Pocahontas furnace	8.00
Pocahontas foundry	8.00
New River foundry	8.00
New River furnace	8.00
Wise county furnace	7.25
Wise county foundry	8.25

FERROALLOYS

Ferromanganese, 70 per cent delivered	250.00
Spiegel, 16 per cent fur., spot.	75.00
Spiegel, contracts, furnace.	75.00
Ferrocarbon titanium, carloads, maker's plant	200.00
Ferrosilicon, 50 per cent, second quarter, Pitts.	150.00 to 160.00
Ferrosilicon, 50 per cent, Pitts., remainder of 1918	150.00 to 160.00
Bessemer ferrosilicon, 10 per cent	55.00
Bessemer ferrosilicon, 11 per cent	58.30
Bessemer ferrosilicon, 12 per cent	61.60

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O.

SEMIFINISHED MATERIAL

BILLETS AND BLOOMS

Open-hearth, Pittsburgh	$47.50
Open-hearth, Philadelphia	51.30
Open-hearth, Youngstown	47.50
Bessemer, Pittsburgh	47.50
Bessemer, Youngstown	47.50
Forging, Pittsburgh	60.00
Forging, Philadelphia	63.80

SHEET BARS

Open-hearth, Pittsburgh	$51.00
Open-hearth, Youngstown	51.00
Bessemer, Pittsburgh	51.00
Bessemer, Youngstown	51.00

SLABS

Pittsburgh and Youngstown.	$50.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$57.00
Grooved skelp, Pittsburgh	2.90c
Sheared skelp, Pittsburgh	3.25c

SHAPES, PLATES AND BARS

(In cents per pound)

Structural shapes, Pitts.	3.00c
Structural shapes, Phila.	3.23c
Structural shapes, N. Y.	3.245c
Structural shapes, Chgo.	3.27c
Tank plates, Chicago	3.52c
Tank plates, Pittsburgh	3.25c
Tank plates, Philadelphia	3.48c
Tank plates, New York	3.495c
Bars, soft steel, Pittsburgh	2.90c
Bars, soft steel, Chicago	3.17c
Bars, soft steel, New York	3.145c
Bars, soft steel, Phila.	3.13c
Bar iron, Phila.	3.73c
Bar iron, Cleveland	3.67c
Bar iron, New York	3.745c
Bar iron, Pittsburgh	3.50c
Hard steel bars ,Chicago	3.00c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh base.	3.25c
Angle bars, Chicago base	3.25c
Standard bessemer rails, mill	$55.00
Stand. open-hearth rails, mill	57.00
Light rails, 25 to 45, mill	3.00c
Relaying rails, light, St. L.	60.00 to 67.00
Spikes, railroad, Pitts.	3.90c
Track bolts, Pittsburgh	4.90c
Track bolts, Chicago	5.115c
Tie plates, Chicago	3.25c

WIRE PRODUCTS

(Per 100 lbs. to jobbers; retailers 5c more)

Wire nails, Pittsburgh	$3.50
Coated nails, Pittsburgh	3.45
Plain wire, Pittsburgh	3.25
Galvanized wire, Pittsburgh.	3.95
Polished staples, Pittsburgh.	3.65
Galvanized staples, Pbgh.	4.35
Barb wire, painted, Pitts.	3.65
Barb wire, galvanized, Pitts.	4.35
Cut nails, Pittsburgh	4.00

CHAIN, PILING, STRIP STEEL

(In cents per pound)

Chain, 1 in. proof coil, Pitts.	7.50c
Sheet piling, base, Pitts.	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 6.50c.

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SHEETS

(In cents per pound)

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c
No. 28, open-hearth, Chi.	5.27c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	5.00c
No. 28, bessemer, Pitts.	5.00c

GALVANIZED

No. 28, open-hearth, Pitts.	6.25c
No. 28, bessemer, Pitts.	6.25c
No. 28, open-hearth, Chi.	6.52c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	4.25c
No. 10, bessemer, Pitts.	4.25c
No. 10, open-hearth, Chi.	4.52c
No. 10, open-hearth, Phila.	4.48c

TIN PLATE

(Per 100 lb. box)

Tin plate, coke base, Pitts.	$7.75

IRON AND STEEL PIPE

Base Pittsburgh

Base, Pittsburgh	Black Per cent off	Galv. Per cent off
¼ to 3 in., butt, steel	51	37½
¼ to 3 in., butt, iron	33	17

BOILER TUBES

Steel, 3½ to 4½ inches, l. c. l.	30
Iron, 3½ to 4½ inches, c. l.	12½

CAST IRON WATER PIPE

(Class B Pipe)

Class A pipe is $1 higher than Class B.

Four-inch, Chicago	65.10
Six-inch and over, Chicago	62.10
Four-inch, New York	66.00
Six-inch and over, N. Y.	63.00
Four-inch, Birmingham	58.00
Six-in. and over, Birmingham	55.00

HOOPS, BANDS, SHAFTING

Hoops, Pittsburgh	3.50c
Bands, Pittsburgh	3.50c
Hot rolled strip steel, Pitts.	3.50c
Hot rolled strip steel, Pitts. stamping quality	4.00c
Shafting, Pitts., carloads	17 off to list
Cotton ties, July, per bundle	$1.93

RIVETS

Structural rivets, Pittsburgh.	4.40c
Boiler rivets, Pittsburgh	4.50c
Rivets ⅞ in. & small., Pitts.	50 and 10 off

NUTS AND BOLTS

(Delivered within 20-cent freight radius)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	50–5 off
Cut thread	40–10–5 off
Larger and longer	40 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	50–10–5 off
Cut thread	50–5 off
Larger and longer	40–10 off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	60–10–10 off
Cold pressed semifinished hexagon nuts ⅞ in. and smaller	70–5 off
Gimlet and cone point lag screws	50–10 off

NUTS

Hot pressed, square blank	2.50c off
Hot pressed, square tapped	2.30c off
Hot pressed, hexagon blank	2.30c off
Hot pressed, hexagon tapped	2.10c off
Cold pressed, square blank	2.25c off
Cold pressed, square tapped	2.00c off
Cold pressed, hexagon blank	2.25c off
Cold pressed, hexagon tapped	2.00c off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago)

Quotation on leading products July 10, average for June 1918, average for April 1918, and average for July, 1917. Prices are those ruling in the largest percentage of sales at the dates named.

	Prices July 10, 1918	Average prices June, 1918	April, 1918	July, 1917
Bessemer pig iron, Pittsburgh..	$36.60	$36.35	$36.15	$57.95
Basic pig iron, Pittsburgh.....	33.40	33.20	32.95	53.20
*No. 2 Foundry pig iron, Pitts.	34.40	34.15	33.95	55.95
*No. 2, Foundry pig iron, Chi.	33.00	33.00	33.00	55.00
Lake Superior charcoal, Chicago	37.70	37.50	37.50	59.50
Malleable, valley	33.50	33.50	33.50	55.00
Malleable, Chicago	33.50	33.50	33.50	55.00
**Southern, No. 2, Birmingham.	33.50	33.50	33.50	46.00
*Southern Ohio No. 2, Ironton	33.00	33.00	33.00	54.25
Basic, eastern Pa.....	32.00	32.00	32.00	50.75
**No. 2X Virginia, furnace....	33.50	33.50	33.50	52.25
**No. 2X foundry, Philadelphia	34.50	34.25	34.25	54.25
Ferromanganese, 70%, delivered	250.00	250.00	250.00	430.00
Bessemer billets, Pittsburgh....	47.50	47.50	47.50	100.00
Bessemer sheet bars, Pittsburgh	51.00	51.00	51.00	105.00
Open-hearth sheet bars, Pitts..	51.00	51.00	51.00	105.00
Open-hearth billets, Pitts.....	47.50	47.50	47.50	100.00
Steel bars, Pittsburgh.....	2.90	2.90	2.90	3.87
Steel bars, Chicago.....	3.17	2.90	2.90	4.50
Iron bars, Philadelphia.....	3.73	3.685	3.50	4.759
Iron bars, Cleveland.....	$3.64	3.64	3.64	4.50
Iron bars, Chicago mill.....	3.50	3.50	3.50	4.50
Beams, Chicago	3.27	3.00	3.00	5.88
Beams, Pittsburgh	3.00	3.00	3.00	4.50
Beams, Philadelphia	3.23	3.185	3.185	4.909
Tank plates, Pittsburgh.....	3.25	3.25	3.25	5.62
Tank plates, Chicago.....	3.52	3.25	3.25	9.64
Tank plates, Philadelphia.....	3.48	3.435	3.435	10.159
Sheets, blk., No. 28, Pitts.....	5.00	5.00	5.00	9.00
Sheets, blue anld., No. 10, Pitts.	4.25	4.25	4.25	8.50
Sheets, galv., No. 28, Pitts....	6.25	6.25	6.25	10.25
Wire nails, Pittsburgh.....	3.50	3.50	3.50	4.00
Connellsville furnace coke.....	6.00	6.00	6.00	12.50
Connellsville foundry coke.....	7.00	7.00	7.00	13.00
Heavy melting steel, Pitts.....	29.00	29.00	29.00	40.25
Heavy melting steel, eastern Pa.	28.50	28.50	28.30	37.00
Heavy melting steel, Chicago..	29.00	29.00	28.63	35.50
No. 1 wrought, eastern Pa....	34.00	34.00	34.00	54.00
No. 1 wrought, Chicago.....	33.50	33.50	33.50	43.75
Rerolling rails, Chicago.....	34.00	34.00	34.00	46.25

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

(For Additional Prices See Page 122)

Essential Needs Absorb Iron Output

Allotments Made Through Government Direction Now Total 200,000 Tons Excluding 180,000 Tons of Basic For England Which is Still to be Definitely Distributed—Buying For 1919 is Increasing

Cleveland, July 9.—Large demands continue to be made upon the committee on pig iron, iron ore and lake transportation to obtain pig iron supplies for producers of essential war lines. During the past week additional distribution of 36,000 tons was made to various furnaces by the committee including 15,000 tons of basic, 13,000 tons of foundry, 5400 tons of malleable, 2200 tons of low phosphorus and 1500 tons of bessemer. This brings the total pig iron allocations since May to approximately 200,000 tons. This does not include the 180,000 tons of basic for England, the distribution of which is not finally settled. A producing interest in this and western Pennsylvania territory is expected to get a large tonnage and the remainder will go to the south, but the exact allocation has not been made. Among the lots disposed of this week were 15,000 tons of basic for a Delaware consumer which went to eastern plants; 5000 tons of additional malleable for a middle western car builder; 4600 tons of foundry for a vehicle manufacturer at South Bend, Ind., 800 tons of bessemer for Erie, Pa., and 750 tons of foundry for a northern Michigan melter. A reallocation was made of 2000 tons of foundry for the Westinghouse Electric & Mfg. Co., Essington, Pa., and this iron will be furnished by Buffalo makers. New requests for iron include about 10,000 tons of basic and 6000 tons of bessemer. The survey of furnace orders still is lacking two or three reports to complete it. An extra effort is being made to bring in the missing returns. Some inquiry for first half delivery continues to come out. Westinghouse Air Brake interests want 7000 to 8000 tons of foundry for first half. Some producers in this district are lukewarm in selling for that delivery, but others have disposed of some tonnage. One maker sold about 7000 tons of foundry iron to three consumers. In selling for next year the furnaces are endeavoring to confine sales to consumers performing essential work. Contracts are so worded that the government price stipulated shall become the price of the contract in the event that federal regulation should cease before all deliveries had been made. This form of contract has been in use some time.

Await Government Guidance

Boston, July 8.—To the pig iron trade it now appears as if government requirements, direct or indirect, would take all available metal. Domestic contracts are set back by the federal demands and the trade is anxiously awaiting the status of various customers to be fixed by the government. Until that is worked out and classification announced, the trade must mark time. Furnaces are working steadily. They are getting more coke and at present there is no trouble from the labor standpoint. There is an undiminished demand. Every broker in Boston has several thousand tons of orders that he is unable to fill.

South to Supply Basic

New York, July 8.—Advices received here are that, as expected, a large portion of the 180,000 tons of basic iron for England will be supplied by Alabama makers and the remainder by western producers. Just

how the division will be made is not clear as all details are not settled. Allocations of tonnage apparently comprise all the business now being transacted in this district. Several thousand tons of foundry have been allocated during the past week to New York state and eastern Pennsylvania furnaces for shipment into this district. Efforts are being made to find 2000 to 3000 tons of foundry for shipment to Pacific coast consumers and it is likely this iron will be placed in the south. Eastern furnaces are giving first attention to all priority orders and allocations and to those coming under the list of preference purposes. With respect to other orders, however, their policies differ. Some of the makers, although filling priority and preference purpose orders first, appear to be shipping on others without first securing written approval as demanded by the director of the steel supply.

No Price Action Taken

Pittsburgh, July 9.—So far as known no action has been taken as yet regarding complaints of some furnace interests that their costs of production exceed the prices they are getting for their iron. These complaints have come from eastern Pennsylvania, Virginia and Tennessee producers and the situation was discussed at length at a recent meeting held here at the call of the subcommittee on ore, pig iron and lake transportation. Tennessee makers made a particularly strong plea for relief. The output of pig iron is proceeding at a high rate of capacity and has been favored by the cool weather and adequate supplies of coke tonnages. Both steelmaking and foundry grades are entering into essential manufacture only and now that the pig iron survey virtually has been completed, the plan of allocating tonnages according to the most pressing needs of consumers engaged on essential war work is working smoothly. There is practically no inquiry for iron coming to furnaces, consumers who are in urgent need of tonnages securing their requirements through the medium of the war industries board. Foundry interests in this district have been doing some buying for 1919 delivery from valley makers. One lot of 3000 tons and another of 1200 tons were closed. One large buyer is seeking 7000 to 8000 tons of foundry iron.

Sentiment More Cheerful

Buffalo, July 9.—There is little change in the pig iron situation. The open market has vanished in favor of the one customer of the iron trade —Uncle Sam. Iron is now being distributed to those who need it according to the A, B, C and D classification of orders. The first two classes carry priority certificates; Class C comprises essentials not covered in this way and Class D, general purposes. Iron is being applied against old orders where these mean that the product will go into the manufacture of munitions of war. There is a more optimistic view shared here by some producers that there will finally be sufficient iron to go round. This impression is buoyed by the announcement that the government is warning industries engaged in its work to be careful not to overestimate requirements. Further allocations are being made in this district. One furnace has been disposing in the open market recently of some further tonnages of off-grade iron.

South to Supply Basic

Chicago, July 9.—Inquiry for northern iron continues strong with none available except where urgent government needs take precedence over less pressing orders booked. Some inquiry for first half 1919 delivery is appearing, but not in sufficient amount to indicate a real buying movement. A small quantity of 1919 iron has been booked by one firm, subject to contingencies prevalent at the time of delivery. A northern Illinois manufacturer of tractors, trucks, motors, etc., is inquiring for from 3000 to 5000 tons of northern foundry for last half delivery. No southern iron is available for distribution on last half, but a government allocation of over 120,000 tons of basic for England is reported. Two large furnace interests near Birmingham have each been given about 30,000 tons of this apportionment. Lake Superior charcoal iron is inquired for both for last half 1918 and for 1919 delivery but no sales are made except upon direct request from the steel director. Furnace interests in many cases are asking that customers place their needs before the government before they attempt to enter their orders for additional tonnage. The intention is that Steel Director Replogle shall authorize the furnace to enter the order for shipment. The same procedure is requested with regard to new orders to be placed. Shortage of labor at the mines and for the handling of materials about the furnaces is delaying delivery of southern iron in some cases. Labor conditions at the furnaces in the Chicago district are satisfactory.

Little Southern Iron Left

Cincinnati, July 8.—An occasional rumor is spread that there will be a considerable quantity of southern foundry iron available for last half shipment that is not yet placed. These rumors are misleading, according to information received from reliable sources. They probably are caused by sales of off-iron to melters who have not entirely provided for the future and who are grabbing any metal they can get. The percentage of iron to be had during the remainder of the year according to one large selling agency, will be very small and transactions will be more restricted in the future. At the present time the furnaces are not at all inclined to release the little iron they may have to offer, preferring to wait until it is urgently needed by their customers who are engaged in essential work. Word has been received that some melters who have heretofore been rated as being engaged in nonessential work may be advanced nearer the head of the class and that some iron will be parceled out to them later. No confirmation of this report has been received.

Pinch More Keenly Felt

St. Louis, July 6.—Plants engaged in war work report very satisfactory deliveries of iron from the south and east but less favorable ones from northern producers. Some confusion was experienced with the inauguration of the new freight rates but this has been smoothed out. Nonwar plants are feeling the pinch more and more. It is pretty clear that there is to be no basic left over after essential manufacturers have what they need, and little foundry iron.

Await Basic Allocation

Birmingham, Ala., July 9.—Priority certificates are being sought from the government on every sale of pig iron now being made. Inquiries are numerous for pig iron and among them are many from regular customers. A little tonnage is being disposed of with government approval. Southern furnaces expect to furnish the larger portion of the 180,000 tons of basic sought for England and Italy but the allocation has not yet been made to them despite some contrary reports. Production of iron in Alabama continues to lag and decrease is shown in the figures obtainable as compared to last year. For the first half of the year the iron production in Alabama is given at 1,270,776 tons against 1,469,674 tons for the first half of last year. The production during the present month will hardly show any improvement as one furnace under repair will be blown in while the Sloss-Sheffield Steel & Iron Co. is about to blow out ont stack

for repairs. The main difficulties are in labor, which is not sufficient or efficient. The railroad car situation in the south continues to show improvement and much iron is being moved out under old contracts. The yard stocks are growing smaller each week. Local consumption is steady.

Allocation Methods Outlined

Philadelphia, July 9.—The pig iron business in this district in the past week consisted entirely of numerous small allocations and occasional cars of off-foundry quality. A new prospective allocation of a heavy tonnage of basic for ingot molds is involved in the plan of a large eastern steel company to turn its ingot mold foundry to the production of gray iron castings for the Emergency Fleet corporation. This will mean that its ingot molds will be supplied from an outside source. Some changes have been made in the method of allocating low phosphorus iron as developed at the recent meeting of Leonard Peckitt, eastern representative of the pig iron committee, with the producers. All inquiries now are forwarded by consumers or whomever originally receives them to Jay C. McLauchlan of the steel director's department, who decides the tonnage to go to each consumer and whether it shall be copper-bearing or copper free. Mr. McLauchlan sends the allocating orders to Chairman H. G. Dalton of the pig iron committee, who transmits them to Mr. Peckitt. The latter recommends back to Mr. Dalton where the order shall be placed. Mr. Dalton finally recommends the allocations to Mr. McLauchlan, who placed the orders. In the allocation of foundry iron consumers needing metal and unable to buy it, make application to Mr. McLauchlan, who sends the allocating orders to Chairman Dalton. The latter, through his committee, makes the allocations and transmits these to Mr. McLauchlan, who places the orders with the furnaces. The orders are signed by Steel Director Replogle and Mr. McLauchlan or L. C. Williams. The orders contain this phrase: "This order was allocated to you by H. G. Dalton, chairman of the subcommittee of pig iron, iron ore and lake transportation of the American Iron and Steel institute and the iron is to be used entirely for government purposes."

The executive committee of the New England Foundrymen's association will omit the July meeting of the association. The next meeting will be held in Providence, Wednesday, Aug. 14.

By-Product Prices Raised

Freight Rate Increase Brings Concessions to New England and Eastern Ovens—Other Raises Reported—Producers Confer at Washington

New York, July 8.—Due to the increased cost of transporting coal as a result of the higher freight rates, the fuel administrator has permitted increases in the prices of by-product coke. The New England Coal & Coke Co. has been allowed an advance of 75 cents, making the new price $14.20 per ton, f.o.b. its ovens at Everett, Mass. The Seaboard By-Product Coke Corp. is permitted to ask an increase of 65 cents, making the new price $9.90 per ton, f.o.b. its ovens at Seaboard, N. J. The by-product maker at Camden, N. J., also is permitted to ask an increase of 65 cents, making its new price $8.80 per ton, f.o.b. ovens. The increases became operative June 25 on the Seaboard and Camden coke and July 1 on the New England coke. Very little activity has characterized the coke market in this district during the past week. This is due partly to the holiday and partly to the fact that most consumers are covered well ahead. Many coke users are beginning to worry about their future supplies, and it is believed that foundrymen may have difficulty in getting coke unless it is to be used directly in making castings for the government.

Price Is Increased

Boston, July 8.—Increase in the price of coke from $13.45 to $14.20, ovens, on July 1, was accepted by the foundry people without comment. The advance of 75 cents a ton, which was caused by the advance in the freight rates on coal, affects all contracts in operation at the present time.

Discourages Southern Shipments

Cincinnati, July 8.—The foundries have lately been receiving shipments more regularly but few of them are able to get anything like a sufficient amount of coke to make them feel comfortable. It is realized that the hot summer season will contribute materially to a reduction in the production of coke and consumers are anxious to get in all the fuel possible. They will hardly be successful as the fuel administrator is trying to discourage shipments from the Wise county, Pocahontas and New River fields to consumers above the Ohio river line.

More Supplies Are Sought

St. Louis, July 6.—Important consumers of coke in this district report fairly satisfactory deliveries on contracts with eastern ovens. They are advised by sources of supply that car efficiency ranges from 80 to 100 per cent and that only the shortage of labor is preventing full shipments. So far as can be learned, however, no consumer here has been able to pile coke, current arrivals being sufficient only to keep melting operations at schedule. The question of increased needs through the second half is occupying both consumers and selling agencies. Contracting over the balance of the year thus far in all cases has been on a basis of first half supplies.

Big Production for Week

Pittsburgh, July 9.—For the first time in the history of the industry, it is said, laborers in the Connellsville coke region worked on July 4 last week and due to this co-operation on their part the output for the week was large. It resulted in furnaces getting adequate and steady supplies of fuel and in consequence the output of pig iron was maintained without disturbance. The labor situation generally in the coke region is improving and is attributed largely to the educational campaign carried on by operators to impress their employes with the importance of working steadily. Numerous contracts for both furnace and foundry coke which expired on June 30 now have been renewed at the government prices with the provision that in the event regulation ends before the contracts expire, prices to be paid thereafter are to be the same as those existing at the time the contracts were renewed. Representatives of the various coke districts are attending a conference with officials of the fuel administration at Washington today, the exact nature of which is not known. It is reported, however, that some adjustments in prices of special kinds of coke may be made. It is thought if there was any action taken by the fuel administration with regard to prices it may have established levels for coke screenings the price of which has not been fixed. Production for the week ended June 29 totaled 352,590 tons as compared with 344,950 tons during the preceding week, according to *The Connellsville Courier*.

Supply Limits Scrap Sale

Shortage of Heavy Melting Steel Remains Most Pronounced—Substitutes Continue to be Used—Committee Locates 50,000 Tons

FOR COMPLETE SCRAP PRICES SEE PAGE 122

Philadelphia, July 9.—Surprising success has been obtained by the subcommittee on scrap in locating new supplies through the bureau of iron and steel scrap dealers. About 50,000 tons of all grades have been located which otherwise probably would not have come on the market. The efforts will continue. Forge and bundled sheets continue to sell actively as substitutes for heavy melting steel and are bringing $27.50 to $28.50, delivered. A Harrisburg consumer bought a large lot of stoveplate for open-hearth furnace use. This grade is now $26.50, delivered. An eastern steelmaker is reported to have closed for a large tonnage of blast furnace turnings. The latter now command $19, delivered. Practically every user wants heavy melting steel, but very little is obtainable and all signs continue to point to a great shortage in the fall. Railroad wrought, wrought pipe, guaranteed low phosphorus and rerolling rails all are scarce. Unguaranteed low phosphorus remains at the maximum price although plentiful and hard to sell. Some misunderstanding evidently prevails among certain dealers that sales in the distant districts on permits offer an opportunity for extra profit. Some dealers have tried to add local teaming and other charges. The subcommittee when granting permits allows an excess over the maximum price equivalent only to extra freight. Illustrating this rule in the case of New England where the freight to eastern Pennsylvania is $3.50, and to Pitsburgh, $4.10, an addition of 60 cents to the price, or $29.60, delivered, is allowed when a permit to ship heavy melting steel to Pittsburgh is issued.

Labor Situation Clarified

Boston, July 8.—The scrap trade is rejoicing over the favorable labor situation. More men are at work in the yards this week than for the last three months. Wages are high and the trade believes that there will be little trouble from now on. The strike in Chelsea which was settled a few weeks ago, when wages were brought up to the Boston standard, did much to clear the atmosphere. Long before that time it had been a common practice for men to work three or four days or longer and then throw up their jobs for positions more attractive. There is not the slightest trouble in getting shipments, but there continues to be a shortage. Prices remain the same and the dealers are getting commissions on everything they sell.

Some Dealers Hold Back

New York, July 8.—Conditions in the New York scrap market during the past week have undergone but little change. Demand has held up well, and prices generally are firm at the government maximum. An exception, however, has been blast furnace borings, which now are 50 to 75 cents under the maximum. The recent advances in the price of copper and lead have led some dealers to believe that a further advance in scrap may soon be made, due to present operating conditions in the trade. As a result some of these are showing a tendency to hold back and await developments.

Sales Extremely Limited

Pittsburgh, July 9.—Iron and steel scrap tonnages moving to consumers are reported to be extremely limited. Demand is being made principally for old material for open-hearth consumption and that for heavy melting steel is especially strong. Consumers still buy direct from producers, although they are showing a greater willingness to purchase through dealers, calling for the payment of the commission of 3½ per cent. Dealers say that it is difficult to find supplies and that their stocks are low. It is reported that of the small tonnages available the greatest amounts involve unguaranteed low phosphorus scrap and machine shop turnings. Car builders have been unable to obtain sufficient quantities of old wheels they need and have appealed to government authorities to get them tonnages of this grade. The Pennsylvania railroad opened bids today for approximately 15,000 tons of scrap iron and steel. The greatest offerings in the list include 1000 tons of No. 1 miscellaneous steel, 600 tons of steel turnings and 600 tons of miscellaneous wheels.

Can Sell Any Tonnage

Buffalo, July 9.—The very strong demand for all grades of scrap continues to feature the entire market at this time. The inquiry is so strong that dealers say they would have no difficulty disposing of any tonnage. As all grades are now at government maximum there are no changes in the schedule. Yards are working under severe handicap due to the labor conditions and the inability to get scrap. Competition is so keen for the little yard scrap in sight that only small profits can be made, dealers say. While consumers in this district are in fairly good shape it is known that some consumers at Pittsburgh and Youngstown district points are in very urgent need of scrap material, their stockpiles having been reduced to the danger point. Although there is shortage of all grades the scarcity of heavy stock is the feature. Railroad lists which closed during the past week went direct to consumers as was expected. They were blank lists.

Mixed Scrap Piles Up

Cleveland, July 9.—Scrap iron and steel yards in this district are filled to overflowing, as a rule, with mixed scrap. In many instances they are compelled to meet car service charges. This condition is partially caused by the railroads, which are putting much unsorted scrap on the market. With the third-quarter opened and prices seemingly assured for the ensuing two and a half months, industrial producers of scrap are releasing supplies. Mills are said to be well supplied and more scrap is moving than has been the case for some little time. Melting steel is not so scarce as it has been, though much more would be traded in were dealers able to get hold of larger supplies.

Heavy Melting Scrap Scarce

Chicago, July 8.—Demand for heavy melting scrap continues strong with but little offered. With this exception the scrap market is quiet. Railroads are offering a fair volume and some unsorted scrap is noted, indicating the shortage of labor prevalent in sorting yards. The Northern Pacific is offering about 1100 tons and the Great Northern about 1500 tons. The Pennsylvania lines also have an extensive list available at various shops throughout the east. Some western buyers who have been selling in the eastern market may avail themselves of the opportunity to buy near the selling points and save shipping.

Demand is Active

Cincinnati, July 8.—An active demand for scrap is noted and heavy melting steel is wanted in the Pittsburgh district. The increase in freight rates will soon affect buying

prices but no changes have as yet been made. It is freely predicted that the present high rate of consumption will cause a shortage of scrap of all kinds before the year is over. Malleable scrap is again in better demand and the supply is limited. No. 1 railroad wrought is getting scarcer as the offerings are very light.

Rate Raise Still Paralyzes

St. Louis, July 6.—The scrap iron and steel market has failed to rally from the blow dealt it by the St. Louis Terminal railway, in raising its rates arbitrarily from 1½ to 6½ cents for the transfer of scrap to and from St. Louis and East St. Louis. Business has come almost to a halt, while efforts are being made to have the new rate set aside. The principal consuming plants are located on the east side of the Mississippi river, and draw virtually all their supplies through this market. The 6½-cent charge is prohibitive and no one wants to buy or sell until the matter has been adjusted. Yard dealers, who play an extremely important role in supplying material to plants working on war contracts, are hardest hit. In their case the shipment of scrap to the east side constitutes a flat movement, and carries the full advanced rate, which has to be paid by either buyer or seller. Brokers are not as seriously affected, as the railroads will absorb all or part of the charge, especially on tonnages originating outside of the 100-mile radius. Melters are in need of supplies, and will doubtless bring additional pressure to bear to get the rate adjusted. Not much new material is coming into sight and offerings show a disposition to shrink. The only railroad offerings before the market this week was a list of 2000 tons by the Wabash.

Southern Market Drifts

Birmingham, Ala., July 9.—The southern scrap iron and steel market is drifting and dealers hoping against hope there will be some change for the better in the near future. No urging is noted to collectors of country scrap to get busy and bring in the product and yards are being kept up only to the extent that acceptable orders may be filled. Local consumers still maintain that they cannot pay the maximum prices and dealers assert there is no inducement to lay in heavy stocks. Old orders are still being worked off.

Gulf States Steel Co., Birmingham, Ala., reports net operating income for May of $246,188, as compared with $402,536 in May, 1917.

Plate Orders Less Heavy

Shipments in East For First Time Exceed New Tonnage—Reallocations Made of Car and Ship Steel

Philadelphia, July 9.—For the first time in months plate mill bookings in the east showed a shrinkage during the past week as new tonnage was negligible and shipments now are running very heavy. Allotments of the week include mainly Emergency Fleet orders and a small tonnage for the allies. The mills are operating as near to capacity as the steel shortage will permit. The new Claymont, Del., mill of the Worth Steel Co., will be started about the middle of August.

On Government Work Only

Pittsburgh, July 9.—Plate mills are engaged on government work only and these requirements will call for operation for the remainder of the year. In the meantime they are expected to receive heavy additional orders from the government. The output is being maintained at capacity and where it is necessary to curtail production in almost every other line in order to insure a complete supply of steel for plate mills, this is being done.

Reallocations Are Made

Cleveland, July 9.—Some reallocations of steel orders for ships and cars have been made among different mills to conform with new conditions which have arisen. One of these lots represents 3500 to 4000 tons of boiler plates for lake boats. The revised orders for car material in this district have been small.

Ship Plates Predominate

Chicago, July 8.—Plate production shows an improvement over the past month, with shipbuilding material predominating in the demand. The increase in output is enabling the mills to supply plates for car builders in addition to the more insistent demand of the Emergency Fleet corporation, which, however, has been in less volume recently.

Rail Orders

On Books Canvassed Preliminary to Price Fixing—$60 Sale

Philadelphia, July 9.—Railmakers have been questioned regarding the tonnages of orders now on their books and the possibilities of production during the months to come. This action is preliminary to the expected announcement of fixing of standard rail prices and the allotment of 1,500,000 to 2,000,000 tons of rails for domestic roads. Sales of about 5000 tons of second quality open-hearth rails which could not be delivered on regular contracts have been made at $60, eastern mill. These rails will go into essential consumption.

Government locomotive and tender wheels have been distributed among the various producers, as has also a large part of the freight car wheels.

Situation Becomes Easier

Pittsburgh, July 9.—Makers of small and boat spikes report that the situation with regard to these products is easier. There has been an extreme scarcity of these sizes, especially small spikes, which jobbers have been asking for insistently and a number of makers were forced to quit accepting business. Shortage of steel curtails production considerably but the output again has been increased and some producers have resumed taking business from their regular customers. Makers of standard spikes are waiting for the railroad administration to put out specifications and requirements in connection with the rails it is to purchase. It is estimated that these will include approximately 18,000 kegs of 9-16 x 5½-inch spikes for 100,000 tons of 100-pound rails.

Rails Are Wanted

Cleveland, July 9.—An inquiry for 3000 tons of 85-pound rails has been issued by the Ann Arbor railroad. Railmakers still are waiting for the government to fix an official price on standard sections.

Increase Car Allocations

Chicago, July 8.—Misconception of the tonnage required for the construction of cars, which were recently placed, has made necessary a new allocation of about 10 per cent of the recent orders. Light rails are being sold steadily both for domestic and foreign use, and mills are now giving from 60 to 90 days delivery, except where military urgency requires immediate supply. Heavy rails for 1919 delivery are sought, but nothing is offered at the present time. The placing of new shell bar tonnage may operate to delay the rolling of rails for last half of 1918 delivery.

Discard Bar Trade Active

Denied Soft Steel, Consumers Buy Material Rolled From Shell Crops—Iron Bars in Demand—Export Licenses Increase

New York, July 8.—Most users of bars, due to difficulty in obtaining mild steel, are placing orders for iron bars, or steel bars rolled from shell discards. Both iron bars and shell discard bars are in fairly active demand, although not many large single tonnages are being placed. Good orders particularly are being placed for shell discard concrete bars. Practically all the business now offering clearly comes under the list of preference purposes and hence there is no difficulty about promising deliveries. Owing to the difficulty of getting export licenses for mild steel bars, there is much foreign demand for iron bars and shell discard bars, although iron bars are favored abroad over shell discard bars for manufacturing purposes. Most of the shell discard bars now being bought for export are for use in concrete work. It is comparatively easy at present to secure export licenses both for iron bars and shell discard bars.

Close Discard Bars

Philadelphia, July 9.—Practically the only bar business being closed in this district involves tonnage being rolled from shell discard. These sales are being made for both concrete construction and for manufacturing purposes. Two 300-ton lots were included in the week's business. Bar iron orders are small.

Bar Demand Strong

Chicago, July 8.—All classes of bars are in demand from varied sources. The scarcity of rails for rerolling restricts hard bars, while in many cases the users of soft steel are obliged to substitute iron for their purposes. Despite limited building at the present time, a steady inquiry is prevalent for reinforcng bars. During the past week two inquiries each for over 500 tons have been in the market. One of these which was refused was for reinforcing for the proposed new Cuban capitol at Havana. A heavy allocation of shell steel was made recently in behalf of Canada and Great Britain. This latter is for last half delivery. Rolling mill operations in general have increased over May but the demand continues to more than keep pace with the output.

New Bookings Are Made

Pittsburgh, July 9.—Makers of iron and steel bars report that a fair volume of new business is being booked. Producers of steel bars are engaged almost altogether on direct and indirect government business and some of them are committed for the remainder of the year or more. Manufacturers of implements are specifying freely. Iron bar makers also are engaged principally on direct and indirect government work, but some of them could take commercial business.

Car Builders Buy Nuts

Chicago, July 8.—Builders are buying nuts and bolts for the construction of the freight cars recently allotted. One inquiry of the past week involved several thousand kegs of standard nuts. No further buying is reported on the large requirement of the quartermaster's department, 25 per cent of which was recently placed.

Operate at High Rate

Pittsburgh, July 9.—Makers of nuts, bolts and rivets are operating at a high rate, some of them at capacity, and are engaged altogether on direct and indirect government requirements. Shipments are going forward in good time. In view of the fact that they are engaged on essential work only makers are having no difficulty in obtaining tonnages of steel bars.

Shafting Demand Active

Pittsburgh, July 9.—Demand for cold rolled shafting, especially the larger sizes, is active and comes chiefly from manufacturers who are engaged on government work. Deliveries are being made in from 60 to 90 days.

Hoop Demand Fair

Pittsburgh, July 9.—The market for hoops and bands remains unchanged, with a fair demand existing for both products. Makers are supplying tonnages for direct and indirect government work.

Jobbers' Orders

Being Filled Without Priority Certificates—Labor is a Factor

Buffalo, July 9.—It is understood here according to an interpretation of the statement of July 5 by Judge Parker that jobbers whose stocks of nails, wire products and cold finished steel have been depleted by government inroads, will be able to replenish them. A mill here has received from the government a sizable tonnage of barbed wire and nails from the government.

Labor Is Unstable

Boston, July 8.—Movements of warehouse products are being retarded by inefficiency of labor. The labor situation is said to be the worst ever known. The leading house in this city declares that it is not getting 50 per cent of efficiency day by day. The laborers read the newspaper accounts of shortage, higher prices in other lines and predictions that the government will take over thousands of men at greatly increased wages, and discuss the unusual conditions as they attempt to do their work. These discussions naturally result in poor service and oftentimes hints of unionization. Every movement, however, that foreshadows organization is nipped in the bud. The warehouse people frankly state that they cannot predict what the outcome will be. There is a strong demand for goods, but the supply somewhat resembles that of sugar. At present there is little complaint from customers, as freight is coming through better than in the last two months. In fact, deliveries have improved about 60 per cent.

Few Sales

Of Ferroalloys Being Made—78 Per Cent Ferro Closed

Philadelphia, July 9.—Ferroalloy sales of the week include two 300-ton lots of 78 per cent ferromanganese which were closed at $250, furnace, plus $4 for each unit above 70 per cent. A Tacony, Pa., consumer is requesting a round lot of 78 to 82 per cent. This business in ferromanganese is being placed on permits. Spiegeleisen is quiet and sales are small. New inquiries for spiegeleisen and ferromanganese total from 500 to 1000 tons.

Ferrochrome is higher and 60 to 80 per cent containing 4 to 6 per cent carbon now is quoted from 42 to 45 cents per pound furnace; 6 to 8 per cent carbon is at 35 to 37 cents per pound. Ferrotungsten and ferrosilicon are unchanged.

Market is Dull

Pittsburgh, July 9.—The market for ferroalloys is quiet. Small lots of 70 per cent ferromanganese are being sold for prompt shipments at $250, delivered. Makers of 16 per cent spiegeleisen are quoting $75, furnace, for both prompt and last half

shipments. The market for 50 per cent ferrosilicon is quoted at $165 to $175, delivered, for spot and $155, delivered, for contract tonnages.

Ship Wire

To Jobbers Without Priority Certificate—Some Mills Hesitate

Pittsburgh, July 9.—Some makers of wire nails are taking business from jobbers without requiring priority certificates. Other makers of wire nails, however, are asking them of buyers. This is especially true of the larger companies which produce various lines of products. They are engaged in manufacturing lines of the most essential kind and are asking for priority certificates in connection with their nail and other business in order not to supply consumers engaged in less essential production and to conserve their supply of steel for the most important lines. Of the 40,000 tons of barb wire recently allocated among mills of this country for France, 6000 tons went to the Pittsburgh Steel Co., and 5000 tons to the Jones & Laughlin Steel Co. Some time ago 10,000 tons were distributed on this order, making 50,000 tons. This amount represents the full inquiry put out originally and temporarily canceled.

Ship to Jobbers

Cleveland, July 9.—Producers have been taking advantage of the recent ruling that merchant wire products to jobbers come within the food classification of the official preference list and, therefore, require no priority certificates. The understanding with the jobbers has been that replacements of stocks are to be made only as the sellers are able to show that the material has been moved for essential purposes. The finished output of wire makers in this territory has continued to suffer from the diversion of raw steel to other mills under government order.

Mill Taken Over

The Rockaway Rolling Mills Co., newly organized, will take over, Aug. 1, the Rockaway Rolling Mill, Rockaway, N. J., manufacturers of bar iron. W. D. Matheson is president and general manager of the new company, and C. T. Grover secretary and treasurer. Edward Ehlers has been the president. The plant will continue to be operated as before and no radical changes are contemplated.

Place More Tank Orders

Structural Shops Will Build War Machines—2000 at Cleveland—Railroad Bridge Awards More Plentiful in East

Cleveland, July 9.—Additional orders for tanks for the war department have been placed with local plants. The total now being built in this territory is about 2000. One structural shop which originally received 750 of the 6-ton type has had this order increased to 1350. A large automobile plant will construct 750 or more of the 10-ton type. The plates required for these tanks largely are of the armor quality and most of the tonnage of steel which enters into their construction is special and high grade.

It is understood a large number of tanks has been or will be distributed soon to standardized shops in various districts.

Bridge Contracts Heavier

New York, July 9.—Bridge work has made up a larger proportion of the week's structural lettings than has been the case in recent weeks. The total represents 4000 or 5000 tons, including one lot of 3000 tons for the Central Railroad of New Jersey. Practically all the new work, awarded or pending, consists of projects which are related directly or indirectly to government needs. Plain shape business is regulated accordingly. The jobbers now are able to obtain some tonnage from the mills under the clearer instructions covering distribution which have been issued at Washington.

Situation is Featureless

Philadelphia, July 9.—An almost featureless situation in structural material has prevailed during the past week. Practically the only shape business of the week was placed by the Emergency Fleet corporation. Awards were few and small. New fabricated tonnage is coming in at far smaller rates than shipments and shops are beginning to view the future with anxiety.

War Blocks Boulevard Bridge

Chicago, July 8.—President Faherty of the board of local improvements has announced that owing to the prohibitive cost of construction materials, the extension of the Michigan boulevard link may be abandoned until the war is won. The original cost of the improvement was estimated at about $7,800,000. Computed in terms of existing prices this estimate now grows to over $12,000,000. The postponement of this work means that several thousand tons of structural involved in the proposed double deck bridge across the river will not be let now. The contract for about 200 tons of structural to be erected by the Symington interests in connection with their new munition plant at Seventy-fifth street was let to the Decatur Bridge Co The remainder of the iron required for this plant, 700 to 800 tons ,is still pending.

Taking Good Sized Tonnages

Pittsburgh, July 9.—Good sized tonnages still are being booked by fabricators in connection with direct and indirect government requirements. No other business is being accepted. It is reported that the Emergency Fleet corporation, which is placing large requirements, will distribute still greater ones in the near future. The McClintic-Marshall Co. has taken 1200 tons for work of the Pennsylvania lines at McKees Rocks, Pa.

CONTRACTS AWARDED

Machine shop addition for Federal Pressed Steel Co., Milwaukee, 115 tons to Wisconsin Bridge & Iron Co.

Machine shop for Lavine Gear Co., Racine, Wis., at Milwaukee, 175 tons to Milwaukee Structural Steel Co.

Testing shop and shipping building for Davis Mfg. Co., Milwaukee, 100 tons to Milwaukee Structural Steel Co.

The buildings for the Emergency Fleet corporation, Lake Denmark, N. J., 200 tons to independent fabricators.

Extensions to plant of Keystone Supply & Mfg. Co., Philadelphia, 260 tons to Morris, Wheeler & Co.

Heat treating room for the Symington Chicago Corp., Chicago, to Decatur Bridge Co., 196 tons.

Roundhouse for Pennsylvania lines at McKees Rocks, Pa., 1200 tons, to McClintic-Marshall Co.

Bridge work, 3000 tons for Central Railway of New Jersey, to the Phoenix Bridge Co. and Bethlehem Steel Bridge Corp.

Government piers at Brooklyn, 3000 tons, to Levering & Gerrigues.

Bridge work for Baltimore & Ohio railroad, 700 tons, placed through Westinghouse, Church, Kerr & Co.

Bridge work for Pennsylvania railroad, 400 tons to American Bridge Co.

CONTRACTS PENDING

Aircraft storage building, Brooklyn, 1700 tons, bids being taken.

Picric acid plant, Brunswick, Ga., 400 tons, bids being taken.

The Multi Metal Separating Screen Co., 251 West Nineteenth street, New York, has been incorporated under the name of the Multi Metal Co. No change in the management or business policies of the company is contemplated. The Multi Metal Co. manufactures special protection devices for sand blast work.

Shell Steel Orders Slower

Inadequate Forging Capacity Continues to Hold Back New Tonnage—Allocation For British Made to Various Mills

Youngstown, O., July 10.—Makers here continue to turn out shell steel in vast quantities, although orders for further tonnages are being placed slowly. The latter is due to the cramped condition of some of the forging interests. Several of the latter plants have an abundance of steel in their yards waiting to go under the hammers. A few forgers prefer to work entirely with gothic shapes instead of bars or billets. In order to produce these shapes, makers would have to put guides on the front and rear of their mill, if they are not already installed. This is because the usual type blooming mill rolls will not grip the steel in a suitable manner for making gothic shapes. Some confusion is resulting from this situation. Makers are further confused at times as to the size of steel they should roll. In cases allotments have been placed for 9-inch shell steel, but after the mill had begun t roll this order, the company to which the steel is to be shipped has sent in a request to roll 6-inch material because their plant is better suited to handle this size. To settle the question, the maker has been compelled to get in touch with officials at Washington. This causes further delay and disarrangement. Part of the recent British allocations for shell steel were placed with the mills here. The rolling of this material was delayed because an export license did not accompany the order. The matter was taken up with officials in New York, who advised that a license had been applied for. After further inaction the makers wired Washington officials who declared that no application had been made. Eventually the matter was straightened out, but after the loss of valuable time. The Italians are evidently taking care of their own needs as no tonnage has been placed for them here for over six months. It is understood, however, that many tons of shell steel consigned to them is piled at an eastern port awaiting shipment.

Discards Sold As Scrap

Philadelphia, July 9.—Because of the general steel shortage, makers are selling no semifinished material except off-heats which are unsuitable for government work. Some billets rolled from shell discards have been sold, but the demand for this is poor. It is learned that an enormous tonnage of shell discards has been sold to Pittsburgh and Youngstown for use as heavy melting steel scrap.

No Relief From Shortage

Pittsburgh, July 9.—No relief from the shortage of supplies of steel is in sight. Makers of billets, sheet bars and skelp continue to receive inquiries but are making no offerings. Tonnages they produce are being supplied to regular customers, where they do not consume the steel themselves. Some makers of sheet bars would buy tonnages of this kind from outside sources if it were possible. Fair demand exists for wire rods and some makers are furnishing limited lots to their regular trade.

Receives New Billet Order

Buffalo, July 9.—A mill here has a fresh allocation of billets from the government. This is a mill which completed some time ago a large billet order for France and Italy. Shell steel tonnage is being allocated in this district. One mill has received an allotment of 8000 tons.

Government Buying Strip

Pittsburgh, July 9.—The government is buying fair-sized tonnages of cold rolled strip steel, some of which are for shipment to France. Mills are operating at about 70 per cent of capacity and bookings are devoted principally to direct and indirect war work. Makers of automobiles have not yet come into the market for any sizable tonnages.

Tin Plate Mills

Maintain Recent Operations—Place Order for Gas Defense

Pittsburgh, July 9.—Operations of tin plate mills remain unchanged and are estimated at between 90 and 95 per cent of capacity. Stocks in warehouses are about normal and represent approximately one week's production. Shipments are satisfactory. Producers as well as government authorities will be satisfied if the output for the present quarter reaches 10,000,000 base boxes.

Allotted for Gas Defense

Youngstown, O., July 10.—A tin plate maker in this district recently was allotted 7000 base boxes of tin plate for containers to be used by the gas defense department. The tin mills in this district which were idle over July 4 have resumed operations.

Prices Raised

On Cast Iron Pipe to Absorb Freight Rate Increase

New York, July 9.—Cast iron pipe prices, for 6 inches and larger, class B and heavier, per net ton as affected by the recent freight advances are $55, Birmingham; $63, New York, and $62.10, Chicago. This represents an advance of $1.65 in the case of New York, $1.75 for Chicago, but the Birmingham base is unchanged. The producers state that most of their capacity now is devoted to miscellaneous castings as there is so little pipe demand.

Wrought Demand Active

Pittsburgh, July 9.—Direct and indirect government work continues to cause an active demand for both butt weld and lap weld iron and steel pipe. Oil country interests are the greatest buyers, taking good sized tonnages of lap weld sizes. The demand for butt weld iron and steel pipe also continues to be active. Jobbers are being supplied with as great quantities as possible to replace stocks they are shipping for essential purposes.

Pipe Inquiry Continues Light

Chicago, July 8.—Definite inquiries for cast iron pipe are extremely scarce in the west. Recognized conditions of transportation, and the reluctance evident in connection with financing new municipal work, operate against sewerage and waterworks extensions at this time. The inquiry from Cleveland for about 600 tons of 6 to 12-inch pipe will be let in reduced quantity to the United States Cast Iron Pipe & Foundry Co. The appropriation was found insufficient. The additional amount will be taken later. The construction of an additional unit to the government nitrate plant near Cincinnati is expected to furnish considerable pipe business.

Pipe Orders Are Few

Birmingham, Ala., July 9.—All machine shops and foundries in the Birmingham district are working to maximum and government work is being given chief attention. Semi-steel shells are being produced here besides other articles for the government. Cast iron pipe plants are working on a few orders for pipe, including some little tonnage for the gov-

ernment, but provision has been made to care for other work in the plants. Constant effort to obtain labor is being exerted by the foundries and machine shops.

Expect Ordnance Plant to Occupy Entire Island

Pittsburgh, July 9.—Orders issued by the war department to industrial plants on Neville island commandeering their entire properties are taken to indicate that the whole island is to be used by the government for the ordnance plant which is to be built there by the United States Steel Corp. The Island Petroleum Co., and the Concrete Products Co. have received notice that their properties are to be commandeered as soon as they can make arrangements to move. The Island Petroleum Co. occupies between 10 and 15 acres and the concrete company nearly as much. The notice of prospective condemnation was not unexpected following the recent order to the Witherow Steel Co. not to make its contemplated improvements in its plant on the island. The county commissioners have received a letter from an assistant secretary of war refusing to grant any further rehearing in the matter of erecting a bridge over the Ohio river at McKees Rocks. The government thinks it unlikely that any such bridge could be completed in time to enlarge the transportation facilities to the ordnance plant.

Buy Iron For 1919

Pittsburgh, July 10. (By wire)—Limited contracting for pig iron for the first half of 1919 has been done. It is said that foundry grades only have been sold for this delivery. Furnaces generally still are unwilling to make contracts for next year. Those made are subject to government regulation with regard to prices, allocations, etc.

To Make Clay Products

The Hicks Fire Clay Products Co. is planning to build a plant at Springfield, Ill., capable of producing 50,000 brick a day. The company owns a deposit of 150 acres of pure fire clay at Drake, Ill., and later purposes to mIanufacture a variety of clay products. It expects to begin work on its buildings within 30 or 60 days and is understood to be in the market for clay-working machinery. W. C. Holmes, Springfield, is president of the company.

Still Aim at Sheet Increase

Plan to Obtain 75 Per Cent Production Still Awaits Tangible Action—Present Average About 70 Per Cent

Pittsburgh, July 9.—Good sized tonnages of sheets for the government are being allocated among various mills. Producers are committed for the next six months or more at their present rate of operations. The average output for the entire industry is said to be approximately 70 per cent of capacity. Efforts to increase the output to 75 per cent of capacity through a uniform distribution of sheet bars so far have not resulted in any tangible action being taken. Some producers feel that if this system is to be adopted it should be brought about through direct and official approval from the war industries board. The Vandergrift works of the American Sheet & Tin Plate Co. was operated on July 4 at the request of the employes. The company had intended suspending operations for the holiday.

Car Tonnage Placed

Philadelphia, July 9.—New orders for sheets with eastern mills include a round tonnage for government cars. Eastern mills have sold several thousand tons of blue annealed, black, galvanized, and also high carbon sheets rolled from shell discards for early delivery to consumers producing work listed under the preference purpose class.

Production is Hampered

Chicago, July 8.—The scarcity of sheet bars is hampering production and operation is much below capacity at the present time. Notification has been sent to warehouses that they will be enabled to replace stock under priority when it is shown that such stock has been distributed in essential lines. Inquiry is discouraged through a knowledge of the shortage prevailing and a marked demand would develop should production improve.

Operating at 75 Per Cent

Youngstown, O., July 10.—Nearly all sheet mills in this district which have been idle since July 4 have resumed operation. During the shutdown, extensive repairs were made to the rolls, bearings, shears, engines, etc. The sheet-bar supply is still low and mills continue to run from hand to mouth. One nonself-contained maker who recently completed several new mills is taking over as much government business as possible in order to keep his mills going and at the same time to have his sheet bar supply guaranteed. A small tonnage of black sheets was allotted through the National Association of Sheet and Tin Plate Manufacturers to a maker here recently. The mills continue to operate at 75 per cent capacity having been requested some time ago to do this by the government. Where the buyer presents sound proof that the sheets are strictly for war purposes, makers are shipping them without delay.

New Price Booklet Gets Cordial Reception

A VIGOROUS demand on all sides for the revised and amplified booklet of base prices, differentials and extras on iron and steel and nonferrous products now prevailing under government supervision has followed last week's announcement by THE IRON TRADE REVIEW that this new publication is ready for distribution. The large volume of orders received testifies to the urgent need felt by both buyers and sellers for such an up to date guide and reference. Changes and amplification of the accepted schedules have been so numerous during the past six months that it is practically impossible to keep in accurate touch with the present situation without the complete and modernized lists. THE IRON TRADE REVIEW booklet is the only complete and up to date price manual being offered today.

Great care and effort has been made to produce not only a strictly accurate and complete price guide applicable to present conditions but to embellish it with all the collateral data, such as official announcements, directories of controlling officials, comparative price tables and charts, etc. which are connected with the scheme of federal regulation. Copies of the limited edition still are available to subscribers at $1 each delivered.

For the year ending April 30, 1919, arrangements have been made by Fairbanks-Morse & Co., Beloit, Wis., to pay a 10 per cent bonus quarterly.

Fixing of Steel Rail Price Delayed

Producers Again Meet This Week to Consider Maximum Figures on Rails, High Speed Tool Steel, Wire Rope and Malleable Castings—Further Curtailment of Tonnage to Less Essential Uses Ordered

WASHINGTON, July 9.—Fixed prices on rails, wire rope, high speed tool steel, and other steel products did not result from last week's conference between subcommittees representing the price fixing committee of the war industries board and the American Iron and Steel institute. These quotations may be determined this week, as another meeting is to be held to hear further information on costs and manufacturing conditions.

Attending the conference last week were James A. Farrell, president of the United States Steel Corp.; E. G. Grace, president of the Bethlehem Steel Co.; John A. Topping, chairman of the Republic Iron & Steel Co.; E. A. S. Clarke, president of the Lackawanna Steel Co., and A. C. Dinkey, president of the Midvale Steel & Ordnance Co. For the government the representatives were J. Leonard Replogle, director of steel supply; Capt. W. L. McCleary, of the army; Lieut. Com. S. R. Fuller, the navy, and H. B. Spencer, the railroad administration.

The committee received a group of manufacturers and dealers in the special products under discussion. This group included: Karl T. Roebling, J. J. Broderick, M. H. Sigfoos, George N. Wright, George C. Moon, E. H. Parker, J. K. Broderick, E. W. Brown, H. F. Lyman, W. C. Bullete, and George S. White.

Cut Metal Bed Output

While these price matters were under discussion, plans were still being made in other divisions of the board for conservation of iron and steel going into finished manufactured products. The latest steel-consuming industry in which curtailment is to be made is that of metal bed manufacturing. The conclusions reached after a conference between a committee of the manufacturers, the priority commission and representatives of other divisions of the war industries board are summed up in the following official statement:

1. That the quantity of steel used in the manufacture of metal beds can and should be substantially reduced as a war measure by cutting down the height of the frames both head and foot; by standardizing the sizes of tubes, eliminating odd sizes; by limiting the diameter of tubes to two inches; and by the standardization of models.

2. That the manufacture of brass beds should be discontinued during the war, as they are a luxury, and as the brass is needed to meet war requirements.

3. That the demand by the government for beds for cantonments, mobilization camps, transports, for use on the west front, for use in connection with housing programs, must be met, and a reasonable supply provided to meet the requirements due to the shifting of labor to war industrial centers.

4.—That not a bed should be manufactured during the war to replace one that can be made to last until after the war, and that the civilian population generally must come to realize that they must get along with the beds and other furniture which they now have, drawing upon the supplies which have been discarded and stored in attics and elsewhere as well as spare articles not in use.

5. That regional and local representatives of the war industries board throughout the United States, representatives of the council of national defense, the war savings organizations and other government agencies should urge all patriotic citizens everywhere to draw from their attics and other hiding places stocks of surplus furniture which can through second-hand dealers or otherwise be made available to meet the essential requirements of the civilian population during the war.

This curtailment program is in line with those previously noted: Stove and heating furnace manufacture, trunk and refrigerator construction, trace chain making for farm implements, hardware manufacture, corset fabrication, automobile license plate production, and other industries in which some form of iron and steel is an essential part. Reduction in sizes, styles, frills, etc., and substitution of materials less in demand are steps which will be taken in the general program.

In this connection, the board last week reiterated its position in the matter of building construction. In a statement on the subject the board said in part:

"The building materials industry, being one of those most adversely affected by war conditions, has the full sympathy of the board and everything that is possible will be done to relieve its situation. To that end the building materials section of the board has been and is in frequent conference with the building interests of the country in an effort to mobilize their resources and their activities to meet the requirements of the government and has served as the point of contact through which the needs of each building industry have been communicated to the war industries board, in order that all possible relief might be furnished.

"The war industries board has been gratified by the patriotic, unselfish and unstinted support with which all branches of the building industry have responded to its appeal and is wholly disposed to do everything possible to relieve adverse conditions. However, the board has not changed its general policy with reference to new construction that does not contribute to war needs. That policy was and is expressed in the resolutions, formerly adopted and published.

"The building materials section of the war industries board considers and in proper cases arranges for and assists industries and plants in presenting to the priorities board their application for preference treatment in the supply of fuel, transportation and raw materials. If preferential treatment is to any extent accorded an industry or plant it is subject to reconsideration at the end of 30 days as the classification may require modification in order to meet changing conditions. The necessity for conserving the fuel supply and relieving congestion in transportation is particularly imperative in what is known as the 'congested district' which, generally speaking, is that territory lying north of the Potomac river and east of the Allegheny mountains. The wholehearted co-operation of the building materials industries in conserving fuel, materials, transportation and labor needed to meet war requirements is invited and confidently expected."

War Output Is Improved

WASHINGTON, July 9.—Secretary Baker's statement to the President that 1,019,115 men had been sent overseas up to July 1, that supplies and equipment for them in France are adequate, and that the output of American war industries is showing marked improvement, is accepted here as perhaps the most concrete survey of this country's achievement in the war. Back of it all, in nearly every instance, the government now admits, the

nation's industries have made it possible, not only in meeting the tremendous production problems, but in providing the industrial leaders, who have shown the way through red tape and stern military routine.

Mr. Baker, in another letter, addressed to Chairman Dent of the house military affairs committee, sets forth a few facts that have their appeal to the steel industry, although as the secretary points out, "such a report might go into unlimited detail." These untold details include the progress in shipbuilding, both for the navy and the shipping board; the army's advent into manufacture and financing for raw materials, such as acids, nitrates, toluol, coke, etc.; the treasury's engineering of huge war loans, and countless and almost innumerable efforts of these and other departments of the government to show Germany we really mean to win the war.

War Purchases Huge

To quote the secretary, "the size of this undertaking may best be seen by these typical purchases made by the quartermaster corps from the beginning of the war to June 15, 1918: 2,567,000 hammers, 5,121,729 axes, 10,870,000 files, 129,000 escort wagons, 26,000 combat wagons, 339,593 horses and mules, 1,700,000 halters, 27,249,000 pairs of shoes and 104,333,000 pairs of stockings."

There have been produced for railroad operations in France more than 22,000 standard gage and 60 centimeter freight cars and more than 1600 standard and 60 centimeter locomotives. Purchases of both cars and locomotives also have been made abroad. A double line of railroad communication extending from the coast of France to the battle front has been secured from the French by the army engineers. Machine guns, for use on aeroplanes to the number of 37,250, were delivered before June 8, and more than 1,300,000 rifles, including more than 1,000,000 of the new United States model 1917, were delivered between the declaration of war and June 1, this year. During May more than 1800 light and more than 900 heavy Browning machine guns were delivered.

Heavy Artillery a Problem

"Probably the most difficult undertaking in the outfitting of an army is the manufacture of heavy artillery," says Secretary Baker. "Not only are the forging and machining processes extremely difficult, but it has been necessary to create manufacturing facilities for a vast proportion of the program. In spite of the difficulties encountered, however, the artillery program is now at a point where quantity production is approaching." Ordnance engineers, it seems, are well on the way to solving the motorization of field artillery. On June 3, the ordnance department demonstrated a five-ton armored artillery tractor, which proved capable of negotiating the most difficult terrain, hauling a 4.7 howitzer weighing 9000 pounds. Approximately $90,000,000 is being spent to provide for the manufacture of nitrites. Among the most dramatic stories of the war is that of the development by American engineers of port facilities on the French coast. The scope may be judged by the fact that it will be possible during the month of July to handle 750,000 tons.

The ordnance department of the army last week announced American records for daily production of ammunition for rifles and pistols were broken on June 27, when approximately 27,000,000 cartridges of every description were produced in plants manufacturing solely for the United States government. The average daily production of United States army rifles of the models of 1917 and 1903 was broken in the week ending June 29. An average of 10,142 rifles of these types—the modified Enfield and the Springfield—was maintained, 55,794 rifles being produced, together with spare parts, equivalent to several thousand rifles. Russian type rifles to the number of 3280 also were manufactured.

To Eliminate Middlemen in Panama Canal Buying

Washington, July 9.—The Panama canal has adopted a more rigid policy regarding purchases of iron and steel and other supplies in order to eliminate middlemen and to deal more directly with manufacturers. The navy department for some years has been encouraging this policy. Different departments report that persons representing themselves to be manufacturers' agents or brokers, have been writing to manufacturers that they are in a position to obtain contracts for them and to secure more expeditious payments and even have the goods of particular manufacturers accepted for government use.

The Panama canal in asking bids from iron and steel producers and others for supplies now is sending the following notice:

"The following covenant is hereby added to and made part of the form of contract attached to the above mentioned circulars:

"The contractor expressly warrants that he has employed no third person to solicit or obtain this contract in his behalf, or to cause or procure the same to be obtained upon compensation in any way contingent, in whole or in part, upon such procurement; and that he has not paid, or promised or agreed to pay to any third person, in consideration of such procurement, or in compensation for services in connection therewith, any brokerage, commission, or percentage upon the amount receivable by him hereunder; and that he has not, in estimating the contract price demanded by him, included any sum by reason of any such brokerage, commission, or percentage; and that all moneys payable to him hereunder are free from obligation to any other person for services rendered, or supposed to have been rendered, in the procurement of this contract. He further agreed that any breach of this warranty shall constitute adequate cause for the annulment of this contract by the United States, and that the United States may retain to its own use from any sums due or to become due thereunder an amount equal to any brokerage, commission, or percentage so paid, or agreed to be paid.

"The following clause is hereby added to and made a part of the conditions on front page of each circular:

"No person shall be received as a contractor who is not a manufacturer of or regular dealer in the articles which he offers to supply.

"Bidders should attach a copy of this amendment to their proposals.

"A. L. FLINT,
General Purchasing Officer."

Ingot Output

Is Maintained at Higher Level—First Half Output Shows Drop

Steel production in the first half of this year was about 1,225,000 gross tons smaller than in the preceding six-month period. The 1918 loss resulted, of course, from lower production in the first few months as steel output now is holding close to the 1917 level.

Regular monthly statistics on steel output, issued by the American Iron and Steel institute, show the present rate of production to be well above 3,000,000 gross tons. These statistics are secured from 29 companies which in 1916 made 88.14 per cent of the total ingot production.

For the first half, these companies produced 17,075,540 gross tons against 18,286,505 gross tons in the last half of 1917. Since March, production has been above the 3,000,000-ton mark. The June total was 3,036,030 gross tons against 3,287,233 gross tons in May.

The following table shows the production by grades and by months since June, 1917:

Mths.	Open hearth, gross tons	Bessemer, gross tons	All other, gross tons	Total gross tons
June, '17	2,265,772	809,552	8,605	3,083,929
July	2,152,479	777,171	9,465	2,939,115
August	2,251,013	863,873	8,331	3,123,217
Sept.	2,195,556	770,064	6,639	2,972,259
Oct.	2,475,754	870,494	5,687	3,351,935
Nov.	2,384,218	772,489	9,550	3,166,257
Dec.	2,195,832	524,084	13,806	2,733,722
Jan., '18	1,763,356	429,588	10,901	2,203,845
Feb.	1,805,233	454,457	14,051	2,273,741
March	2,331,048	763,255	16,078	3,110,381
April	2,377,974	769,249	16,187	3,163,410
May	*2,475,131	796,244	15,858	*3,287,233
June	2,235,202	786,380	15,348	3,036,930

*Revised.

Organize Industry

In the South for War Purposes Under Regional Plan

Birmingham, Ala, July 9.—Survey now is being made and statistics are being gathered in Zone 13, of the resources and conversion section of the war industries board, which includes Alabama, Tennessee and Mississippi and parts of Louisiana and Florida, looking toward the application of all industries to the task of winning the war. In response to a call by A. C. Crowder, president of the Birmingham Chamber of Commerce, representatives of civic associations, owners and managers of manufacturing plants and others interested, held a conference in Birmingham July 5, and met Truman H. Aldrich Sr., of Birmingham, director of Zone No. 13. The attendance was large and all the states in the zone were represented except Florida. An outline of what was being expected by the government of the manufacturers was given by John H. Bankhead Jr., of the Jasper, Ala., chamber of commerce. Plants producing war essentials are to be assisted to secure all the raw material, fuel and other things needed while those on nonwar production will be asked either to convert or will be allotted such surplus as finally may be spared. Director Aldrich announced the appointment of an executive committee, composed of a member from each state. An advisory board in each state is to be selected later. The executive committee consists as follows:

Alabama—George W. Conners, of the Conners-Weyman Co., Birmingham.

Tennessee—John E. Edgerton, Lebannon, president of the Tennessee Manufacturers' association.

Mississippi—R. M. Weaver, Corinth.

Louisiana—A. J. Boylan, assistant general manager of the New Orleans chamber of commerce.

New York Acts

New York, July 8.—William Fellowes Morgan, president of the Merchants' Association of New York, has appointed, at the request of the war industries board, a regional industrial commission for the New York metropolitan zone, to classify and coordinate productive plants. The commission includes the following: Chauncey B. Baldwin, Perth Amboy, N. J., vice president of the Standard Underground Cable Co.; W. D. Baldwin, New York, president of the Otis Elevator Co.; William Hamlin Child, New York, president of the Barrett Co.; James Eastwood, Paterson, N. J., president of the Benjamin Eastwood Co.; Charles Hayden, New York, Hayden, Stone & Co.; A. H. Jameson, Bayonne, N. J., vice president of the Bayonne Steel Casting Co.; Charles F. H. Johnson, Passaic, N. J., president of the Rowland Johnson Co.

Enters Chandlery Business

H. C. Donaldson, well known as the former lake coal manager at Cleveland of the Pittsburgh Coal Co., has resigned his position as manager of the River Coal Co., New Orleans, to become identified with the firm of Woodward & Wight, ship supply dealers of New Orleans.

Added to Committee

Horace S. Wilkinson of Syracuse, N. Y., has been added to the subcommittee on pig iron, iron ore and lake transportation of the American Iron and Steel institute, of which H. G. Dalton of Cleveland is chairman. Mr. Wilkinson is prominently identified with the Great Lakes Steamship Co.

Steel Corporation to Increase Plate Production

New York, June 10 (By wire)—Additional equipment to increase its plate rolling capacity by 10,000 tons at Homestead, Pa., and by 7000 tons at South Chicago, is being installed by Steel corporation mills. This increase is expected to be available by the end of the present year.

The Steel corporation now is operating its blast furnaces at 93 per cent of capacity and its steel works at 95 per cent of rated output which represents practically full production.

The Non-Ferrous Metals

Copper **Lead** **Spelter** **Tin**

	*Copper	†Spot Straits, tin	‡Lead, New York basis	Spelter St. Louis basis	§Aluminum	Spot antimony
July 3	26.00	.....	7.90	8.50	33.00	13.12½
July 5	26.00	.....	8.05	8.50	33.00	13.12½
July 8	26.00	.....	8.05	8.50	33.00	13.12½
July 9	26.00	.....	8.05	8.50	33.00	13.12½

*Government fixed maximum price for prime lake, electrolytic and casting copper, in ingots, pigs, slabs, etc., less than carloads, 24.67½c.

†No spot Straits tin offering.

‡Price agreed to by leading interest and independents.

§Government fixed price for 98 to 99 per cent ingot aluminum in 50-ton lots; lots 15 to 50 tons, 33.10c; one to 15 tons, 33.20c.

NEW YORK, July 9.—The freight rate situation continues a disturbing element in the metal markets. The advance which became effective June 25 so upset the whole rate structure of the country, that instead of increases of 25 per cent becoming effective, the actual advances on lead, spelter and copper were from 75 to 125 per cent. The metals traffic committee, comprised of representatives of leading copper, lead and spelter smelting interests, has already conferred with the railroad administration at Washington concerning the unsatisfactory rate situation and another meeting is scheduled for July 11.

On July 2 the war industries board, after conferring with representatives of copper producing interests, who showed how increased rates and other costs were affecting them, agreed to an advance in the price of copper to 26c a pound, in carload lots, effective July 2. On less than carload lots the new price is 27.30c.

Owing to the advance in copper, brass mills have advanced their quotations on products generally, including sheet, wire, rods, tubing, to accord with the new copper price. These advances became effective July 3. The war industries board has asked the mills for a classification of the orders on their books and it is believed this is a prelude to action which will eliminate all nonessential business from mills' books, possibly as a means of conserving copper.

The lead price as fixed by agreement of the American Smelting & Refining Co. and all other producers, was advanced at all points except St. Louis last week, the St. Louis quotation remaining at 7.75c, while the New York quotation is now 8.05c. This change in differential was made because of the increase in freight rates on lead from 19c to 35c from East St. Louis to New York.

The spelter market has been quiet but firm, with sales recently reported for third quarter shipment at 8.62½c. The rate situation is affecting this market somewhat.

Aluminum remains at the government fixed price of 33c, with the government and indirect war business taking most of the supplies.

Antimony has reflected little activity, prices having been stationary the past week at 13c to 13.25c.

Tin has been quiet and has changed little. July shipment of Banca from the Orient is 91c and Chinese today at Chicago, 96c.

Standardization vs. War Progress

Why the Government Changed Its Views on the Ford Idea—Complete Standardization of Models Stultifies Progress, Discourages Inventive Genius and Curtails Production During Critical Periods

BY V. G. IDEN

IN one of the many bare, white rooms in Washington occupied by the ordnance department a dozen men were discussing standardization. The object of their remarks in this case was lifting jacks for use on army motor trucks.

"If you can give us an order today or tomorrow covering our regular line of jacks we can commence delivery next week and by dividing up the business complete the whole order in 90 days," explained the spokesman for the several jack manufacturers who had been called into the conference. "Of course," he added, "the parts of the jacks turned out in different factories will not be interchangeable, but we understand that with the situation abroad as it exists today, deliveries are much more important than any advantage or economy that might be derived later from complete standardization."

In a nutshell, the foregoing conversation explains the whole controversy on standardization of war equipment that has been raging around the war department for months. Which is more important, to get the equipment across the sea to France or to standardize and wait? Standardization has many advantages. It makes quantity production on a tremendous scale possible; it simplifies repair work and it saves money. It also has disadvantages. When carried too far it throttles progress and stagnates invention—and inventions in this war have changed tactics and shifted the balance of power over night. But what seems of even more importance right now, standardization means delay in getting production under way and delay may easily spell disaster. All this is thoroughly understood by engineers and production experts. But it does not seem to be fully comprehended in Washington, where the war department worships at the shrine of standardization, with the "Ford idea" as its conception of perfection in manufacturing method. The conversation quoted at the beginning of this article, for instance, is based on an actual incident. And in concluding the negotiations, the government insisted on a standardized army jack being manufactured. The inevitable delays ensued, and our truck drivers in France are probably either borrowing jacks from passing Frechmen or leaving their machines in the mudholes.

From these remarks it should not be inferred that standardization as applied to military equipment has no virtues. As previously pointed out, it has many advantages, but it must be approached in time of war with a sense of balance. It might be remembered for instance that Henry Ford was a decade in developing his universal car. Nobody wants the war to last that long. Also as those on the inside know, there have been many changes in the standardized Ford car, and recently this company departed from its traditions even to the extent of designing a new rear axle for commercial hauling. It is a consideration of these factors that has led some critics to declare that the Washington war administration has gone standardization crazy.

Success with standardization may be achieved in one commodity whereas it might prove disastrous in connection with another. The experience so far had with this principle of manufacture demonstrates that standardization might be well for peace times when it would not be at all advisable for war times. As previously pointed out, standardization has a tendency to prevent improvements and betterments whereas the rapid developments of war demands constant progress. Experience has also shown that where you have never built an article before it might be profitable to begin with standardization, whereas if the country has been building similar commodities for years and there does not exist standardization between the various private factories, the requirements of war are best served by taking what can be had immediately and not waiting to overthrow the productive program which the country has already built up. The government had already given its verdict in the case of the standard motor truck, and that verdict is largely patch-work. So far had the work progressed on the largest type of truck that it has been determined to continue the production of this machine but it is understood the other four standards have been discarded. Wil-

Photo released by Committee on Public Information

THESE STANDARDIZED TRUCKS ARE ALL RIGHT

The five-ton standard army trucks have been completely successful but only relatively few have been built—Meanwhile Quartermaster General Goethals has filled the gap by sending thousands of ordinary commercial trucks to France

HERE is a locomotive of a type that could scarcely be called standardized, yet for the conditions under which it must work it is unsurpassed. Being a triple articulated compound, it is virtually three locomotives in one. It was built by the Baldwin Locomotive Works, in whose vaults in Philadelphia are designs for thousands of locomotives each suited to some particular service.

liam Denman, as first chairman of the shipping board, had some standard designs for wooden and for steel ships prepared. All merchant vessels were to be built along these patterns. Recently plans have been drafted under the advice of some of the most experienced shipbuilders of the country for the construction of various kinds of ships, much larger than those originally planned by the government and ships calculated to be peculiarly fitted for the trades into which they will be placed by the government.

Airplane Engine Standardization

Thus in two distinct cases where the idea of 100 per cent standardization was originally adopted by the government, the necessities of war and of other conditions have warranted the discarding of a portion of the standardization program and the substitution of specialized production. The aircraft board has held out for standardization very largely and it nas been for this reason that it has been subjected to such heated criticism. The Liberty motor was devised at the suggestion of the war department for our new air fleet because it was desired to have a standard machine that would be useful in all conditions. It has been claimed, and upon good authority, that the British and the French advised the war department that it would be suicidal for us to adopt a standard airplane engine for all purposes. Very recently war developments have made it advisable to design an entirely new single-seat machine for the use of our army aviators.

The fate of the Liberty motor is today in the balance. The searchlight of publicity thrown upon it has advertised the fact that it is not today the machine it started out to be. Many and radical changes have been made in it, and the prospects are that many more will be made before the end of the war. In the meantime, attention is being gradually diverted to other types of airplane motors which are changed and improved from time to time as war experience dictates. These are the types of machines which will be used to defeat the Hun. This is the verdict given by some of the best experts in the art of flying.

Recently the railroad administration has become innoculated with the standardization bacillus, and elaborate plans and specifications for standardized locomotives and cars have been drawn up. It should be pointed out that the designs for the standard equipment are not limited to one type of freight car nor one type of locomotive. There will be constructed 12 types of locomotives and various types of freight cars. Standardization in the case of freight cars under these conditions is not considered such a set-back to railroading as the standardization of the locomotive, even though 12 types of locomotives are planned. Recently also the standard specifications for locomotives have been altered so as to give considerable latitude in the matter of manufacturing the specialties. Going back to the original attempts at standardization, it is realized today that this principle of quantity production was advocated by those business men who were first brought to Washington to advise with the council of national defense. These men were recognized as some of the most successful in business enterprises in America. It was thought that they would be best qualified to mobilize the industries of the country for our war program. To them is attributed the standardization ideas of the government. It has been said that they were too greatly impressed with the success of the Henry Fords of the country and too limited in their knowledge of conditions on the war front. America looked to them to get from the country quantity production.

Standardization in Germany

True, Germany has adopted standardization in her war implements, but only to a limited extent. When the war began Germany's big guns were the wonder of the conflict. The British invented the tank and that put the German gun into the background. Then came the Caproni plane, the 70-mile gun and other inventions of the war in rapid succession. Nothing has stood still and it has been shown that the nation which is most capable of bringing into the conflict new weapons and better weapons is the nation which gains the upper hand. But to bring about these developments the nation must not depend upon standardization. Stand-

ardization is an enemy of improvement and it is this truth which is being forced home to the council of national defense and to the war administration in Washington. It is standardization, too much standardization, which has afforded a basis for criticism in and out of congress. But to the merit of those most capable men now in charge of affairs in Washington it must be said that the mistakes made last summer and fall are being corrected as rapidly as can be.

Experience With Trucks

The council of national defense last August invited to Washington a group of automotive engineers and asked them to design a standard motor truck. There was good excuse for this because the motor truck had not before assumed any great importance in war. It was used mostly in construction work and local business, and no very serious attempt had been made to design a motor specially for traction work, to haul heavy loads, etc. The motor truck up to that time had been a development of the swift passenger automobile. To design a heavy-duty motor truck for the army was, therefore, a necessary accomplishment. It speaks well for the automotive engineers that they designed a truck and a motor which is today proving so serviceable. These engineers accepted the best features in all the motor engines then extant and incorporated in the new standard design other and more improved ideas. The truck was designed to carry 5 tons, a heavier machine than was ordinarily in use in the United States or produced by American plants.

The parts manufacturers were naturally favored in the production program outlined because it was planned to produce the new 5-ton heavy truck upon the standard basis. But the great success attained with the heavy-duty 5-ton truck prompted the advocates of standardization to insist that the success came from standardization alone. They were successful in persuading the authorities to have other types of trucks designed upon the standard basis. Three other standard trucks actually were designed. These were to be of smaller carrying capacity, from one ton up. While their designs were completed and turned over to the government no trucks have actually been built along these patterns.

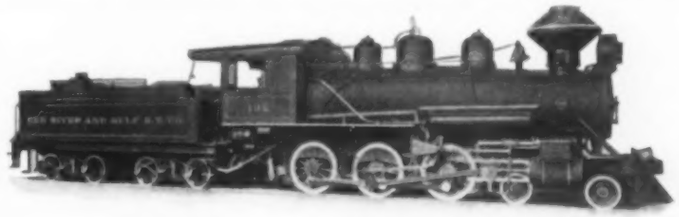
It was after Stettinius and Goethals came into power in the war department as a result of much criticism of the efficiency of the original assistants to Secretary Baker that it was discovered that the 100 per cent standard motor truck program was losing favor. General Goethals went into the market and purchased those commercial trucks which were available. He purchased trucks from the White people and he purchased Ford trucks. He purchased Dodge trucks and trucks of other makes. He did not wait for standardization but insisted that time was essential and motive transportation must be supplied the American expeditionary forces immediately. As a result the army had sent to France probably between 8000 and 10,000 motor trucks before the Germans began their memorable drive this year. In view of the losses of the past three months these motor trucks will save the day for the allied forces and they would not have been in France today had General Goethals waited for the standard machines.

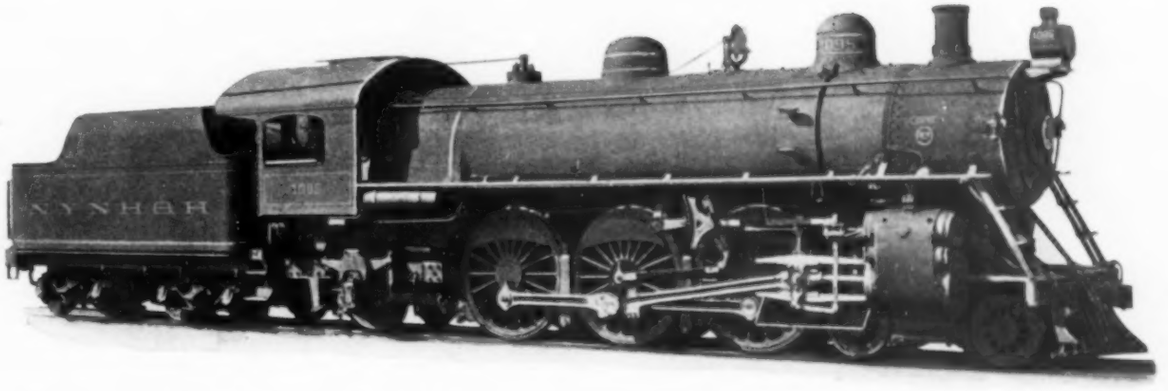
Here was afforded a memorable experience with standardization and one that the war department is not likely to forget. As a result of this trend in sentiment toward the standard truck, one officer of the army who was the greatest advocate of the principle has been demoted and sent to another post of duty. In the face of such an experience it may seem peculiar that the aircraft board has insisted upon the production of a standard airplane motor. But the conditions in aircraft production in the United States were somewhat different from the conditions existing in the automobile industry. The results with the two types of engines have also been different as the public well knows.

Experience With Liberty Motors

The Liberty motor has been heralded by Secretary Baker with great faith. Practically the same automotive engineers assisted in designing this motor who assisted in designing the standard heavy-duty motor truck. While there was reason for their success with the heavy-duty truck, there was less reason for success with the

HIGH authorities doubt if 12 types of locomotives adopted by the railroad administration will meet requirements of widely varying conditions. Consider the difference between service on the Red River & Gulf and the New York, New Haven & Hartford, typified by locomotives illustrated herewith.





airplane motor. It was a new field of endeavor, almost. Then, too, it has been charged, the aircraft board failed to do like General Goethals did. It failed to purchase aircraft motors and airplanes from the few established airplane manufacturers in the country. It failed to purchase all the flying machines of unquestionable excellent design that were offered to the government. Had it filled up all the American airplane factories with orders and proceeded as a side issue to develop the standard engine it is probable that there would not have been so much criticism of the results accomplished by this board. It is because of its lack of achievement that the public is prone to criticise and it is felt that this lack of achievement is due to single-mindedness in developing the so-called Liberty motor. Now the Liberty motor, after sundry and radical changes, is proving to be an excellent motor for many purposes. It will make a good motor in training machines, and will probably be useful in patrol machines and for heavy war duty.

Thus it is shown that serious attempts have been made to completely standardize two important machines of war, the motor truck and the airplane, without much success. Now then it is attempted to standardize the means of transportation, that is, elements in the war game which are not directly in the line of battle. Even here standardization is declared to be of questionable value. The original shipping board proposed to build wooden ships chiefly of the Hough and Ferris types. Today the board has added other and larger types after building several hundred of the Ferris boats in new shipbuilding yards. Even the smaller types of steel ships are to be discarded wherever possible, and vessels of large tonnage and with swift engines are to be constructed. The practicability of this has been shown by Charles M. Schwab, director general of shipbuilding, and its necessity has been argued by the acting quartermaster general of the army.

Today, instead of concentrating attention on the small standard merchant ship, the Emergency Fleet corporation is letting contracts for large troop ships, for refrigerator vessels, for oil tankers, for barges and for seagoing tugs. These are not standardized because they are being built for specialized trades. They are standardized only in their basic units. Despite this tendency of the administration to get away from the standard type of machines, the railroad administration has adopted it in a limited way. Here is what Alba B. Johnson, president of the Baldwin Locomotive Works, said about this program:

"Many attempts have been made to fix standards for particular railroads and groups of roads, but in every instance these have given way to the urgency of keeping pace with other roads which have not attempted to limit themselves with the iron bands of standardization. The practical result of such attempts has been that those lines most rigidly adhering to their standards have lagged behind their competitors. More than 80 years experience has convinced railroad men that the most advantageous field for standardization is in details rather than in the complete locomotive or cars as a unit. Most of the advantages sought through standardization have been obtained by unifying or standardizing the design of various parts common to a considerable number of classes."

Hill tried standardization without success and he followed along the lines suggested by Johnson. He limited his standardization to various parts of the machines. Varying conditions of transportation in the United States requires varying types of rolling stock. The low-wheel engine used in the mountains should not be expected to replace the high-wheel engine of the plains. The oil-burning engines might not be profitable in the coal districts, and a coal-burning engine would not be profitable in an oil district.

To adopt a full program of standardization upon American railroads today might prove disastrous in many instances. It is said that early in the days of government operation the railroad administration brought some of the heavy locomotives from the west to help move the congested freight on the eastern roads. When the first of these locomotives demanded repairing it was necessary to send it to Chicago, the nearest repair shop equipped to undertake the work. Therefore standardization of

Photo released by Committee on Public Information

A NEW STANDARDIZED MILITARY TRUCK DOING STAGE TRICKS

railroad equipment means much more than simply the standardization of the locomotives and the freight cars. It means the standardization of the repair shops and of all the facilities along the roads. This raises a most important question of expense. Would it be advisable to jeopardize the ability of the roads to keep in going conditions the equipment they now have? Would it be feasible to scrap the present equipment and facilities for the new standard equipment, except perhaps very gradually? Authorities believe that it might be feasible to accept a limited standardization, which would constitute the emergency equipment of the railroads, an equipment which could be shifted from locality to locality as the demands for transportation facilities increase and subside.

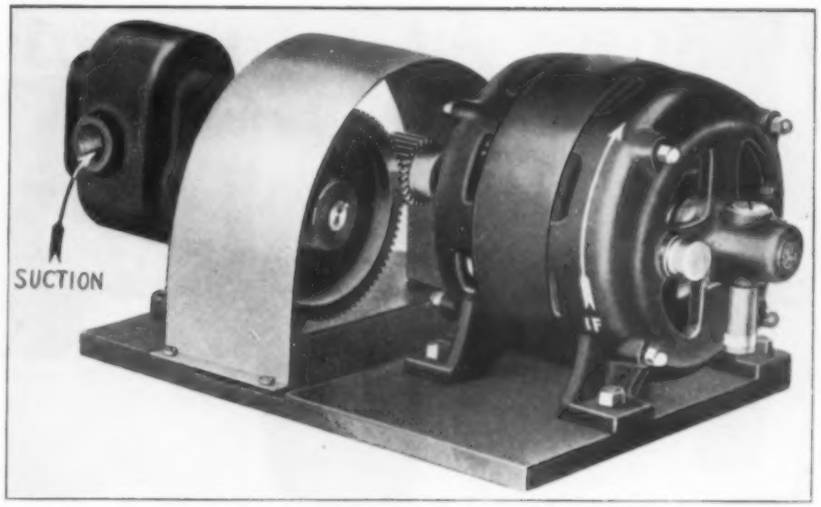
Our experience with standardization in war time does not entirely disapprove the efficiency of standardization. As a matter of fact this experience shows merely that there are limitations to the efficiency of that program of production. It is not entirely a question of ultimate cost. It is a question just now of speed of production and of promoting inventive genius and improvement. War demands quantity and it demands quality. The idea is to bring out both in those war machines which America is destined to build during the next year or so. To do otherwise means inefficiency and possible military defeat.

Turret Lathe for Munitions Plants

A turret lathe for boring the nose of 6-inch shells and the nose and inside of 4.7 shells was recently developed by the A. R. Williams Machinery & Supply Corp., Buffalo. The lathe is shown in the accompanying illustration. It is pointed out that this machine embodies in its construction many ideas which practical experience has shown to be desirable in a machine used for heavy, continuous boring operations on projectiles. The head is of the back-geared type carrying a 2-step cone for a 6-inch belt. With a double-speed countershaft a choice is given of eight spindle speeds. It is said the latter will take care of all operations which the lathe is called upon to perform.

The spindle is of the hollow type having a 1½-inch hole through the entire length, while the spindle nose is threaded for the accommodation of chucks. The front of the spindle is recessed 6¼ inches in diameter and 20 inches deep. This takes care of a 6-inch shell in the rough so that there will be no overhang while boring and does away with the necessity of using steadyrests. The spindle journals run in bronze bearings.

The saddle upon which the turret is located is made long so as to give the requisite stiffness required in heavy boring operations. The turret is bored to receive 3½-inch bars. An indexing device is provided which is fitted with an automatic stop to determine depths when boring. A lever at the front of the machine gives four different feeds. For bottoming, the pilot wheel has been geared 3 to 1 in the saddle rack. This feature gives the operator sufficient power and close control. The lathe swings 24½ inches over the bed and the maximum distance between the spindle nose and the turret face is 48 inches. The regular equipment includes countershaft, oil pan and air chucks.



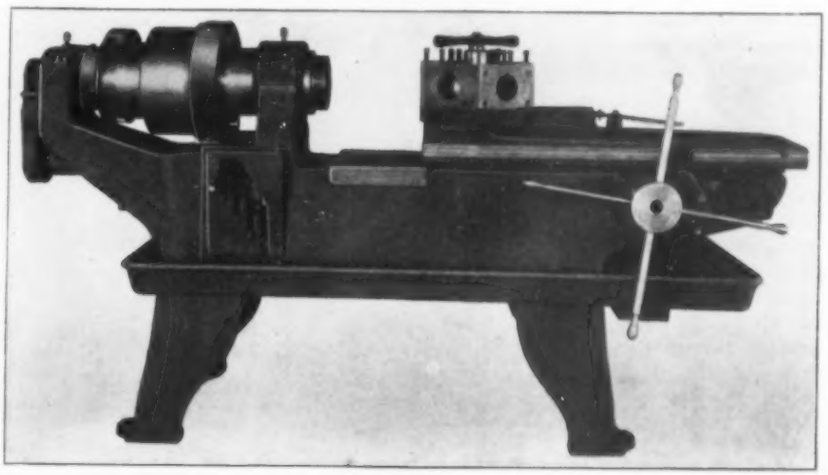
ELECTRICALLY-DRIVEN ROTARY OIL PUMP

Motor-Driven Oil Pump

William W. Nugent & Co., Chicago, have recently developed a geared, motor-driven rotary pump for oiling systems and for such other purposes as pumping oil from barrels to overhead reservoirs. The pump, which is shown in the accompanying illustration, is made in two sizes. The smaller size has a delivery of eight quarts a minute, while with the larger size a discharge of 40 quarts a minute is obtainable. The pump is designed to run at 500 revolutions per minute.

Power is transmitted from the motor to the pump through the medium of a pinion meshing with a spur gear. The motor is controlled through a rheostat and switch box which can be mounted in any convenient place.

Coal, like other sea-borne goods required by Swedish industries, has been imported in such quantities that no stoppage of work in consequence of a shortage of coal has hitherto been necessary. Nevertheless, since the extension of the submarine blockade in February, 1917, importation of British coal has proceeded under great difficulties, and the high freight rates have forced up the price to 10 times the normal price.



BACK-GEARED HEXAGON TURRET LATHE FOR SHELL WORK

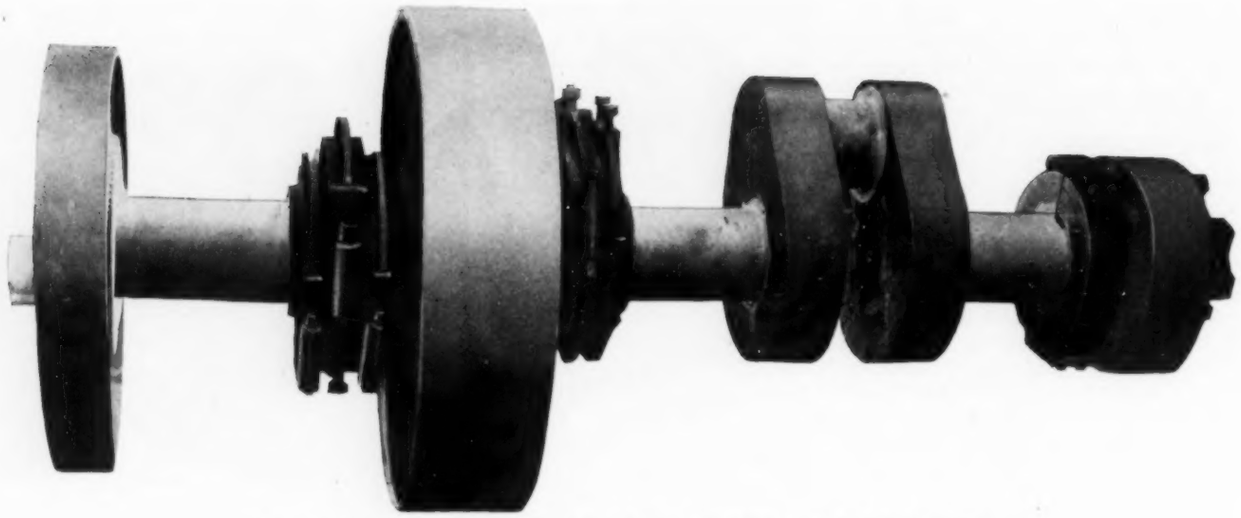


Fig. 1—A Big Job for a Steel Plant Repair Shop—The 85-ton Shaft Built at Minnequa

"I Will" Routs Old Man Gloom in West

OLD MAN GLOOM threw a monkey wrench into the machinery of the Colorado Fuel & Iron Co., the other day when the watchman wasn't looking. The 85-ton crankshaft in the 40-inch blooming mill cracked as quickly as a boy's tooth when his jaws come down on a recalcitrant hickory nut. Of course, it was a figurative monkey wrench that was thrown, real wrenches being too costly to throw away now days, but the damage was there just the same. The little imp Trouble chortled with glee at the old man's ruthlessness and it looked for a time as if the noble shaft had received its deathblow.

Experts thought the massive piece of machinery could not be duplicated in the west. It was a trying situation at the Colorado plant, with every effort being made to accelerate production. Such are the difficulties encountered in these war times, it was found that shipment from the east would be subjected to unlimited delay, not to mention the time that would be required to manufacture a new shaft. Then Experience whispered into the ears of the company's management and Ingenuity spurred them on.

"If man can take a handful of sand and read all the starry hosts of heaven, as Bob Ingersoll said, you boys should be able to make a new crankshaft in an iron plant!" Brother Resourcefulness whispered.

And so the men were put to work. They entered into the spirit of the enterprise with the inspiration of the man who does new things. The old crankshaft was repaired! Rebuilt would be a more accurate term. This job was done so neatly the company decided to manufacture a new shaft in the Minnequa shops. The men completed the new shaft in six weeks, and to guard against future accidents Dame Caution prompted them to make a duplicate shaft to have on hand in the event of another breakdown. I. Will gave Old Man Gloom the laugh.

It was an accomplishment of importance not only to the Colorado Fuel & Iron Co., but to the entire industry, for it demonstrated what can be done in the west. The circumstances were such that the task appeared impossible of achievement. The company's plants were not equipped for such work, and no plant in the west was considered capable of manufacturing an 85-ton crankshaft. The new shaft now in use, a duplicate of the old one, is 23 feet 3½ inches over all, and the largest diameter is 2 feet 4⅜ inches. A cast-steel crank, 6 feet 3 inches long, and with 2-foot 6-inch stroke, was shrunk on the shaft, and pieces from the old crankshaft were used in making the new one.

"Say no more of German ingenuity," muttered Old Man Gloom, as he slunk away, while the boys in the repair shop gave a lusty cheer when the job was done. "These boys are aces, every one. This is no place for me. Good night."

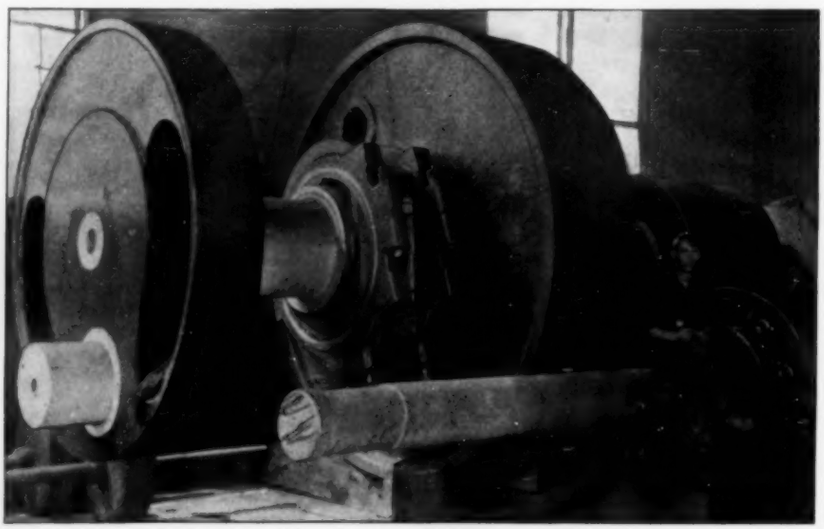


FIG. 2—A TRIUMPH OF INGENUITY IN THE WEST. THE NEW 85-TON CRANK SHAFT MADE IN THE REPAIR SHOP OF THE COLORADO FUEL & IRON CO., READY FOR INSTALLATION

Silicomanganese Supply is Assured

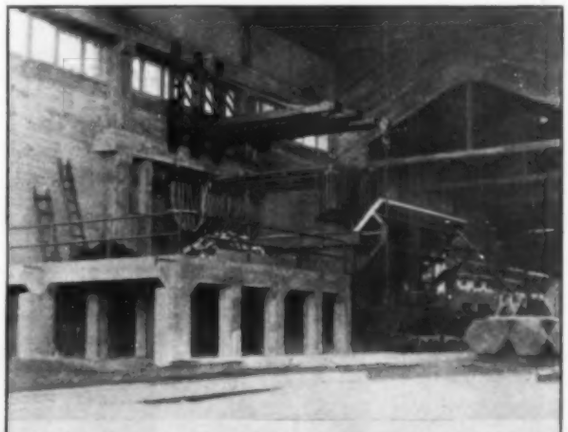
An Electric Furnace Plant, Located in California Near Large Supplies of Raw Material is Now Furnishing This Product on a Commercial Basis— The Plant Manufactures its Own Electrodes

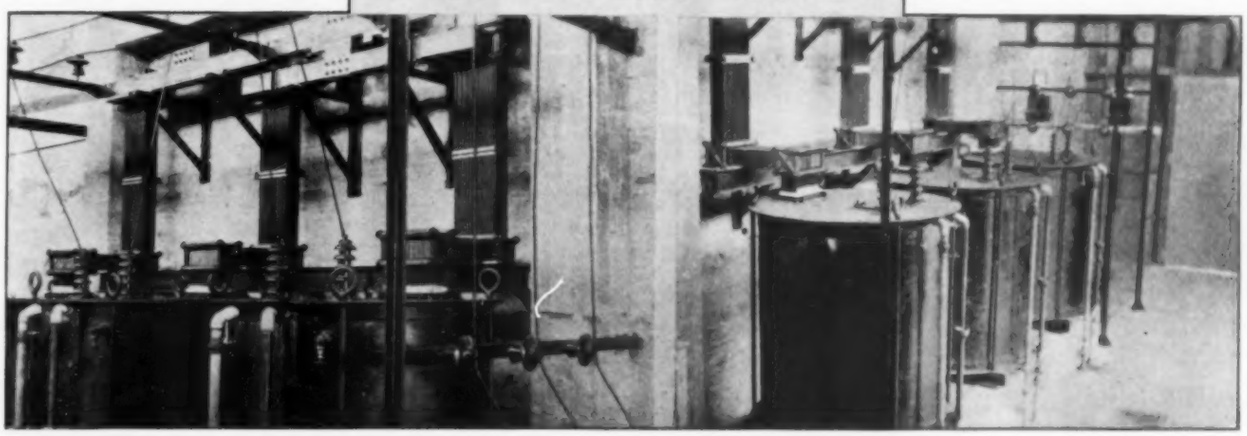
SILICOMANGANESE for the first time is being manufactured in this country on a commercial scale. Although consumed regularly, and in considerable quantities, by several important steel companies, nearly all the entire requirements have been brought from abroad. At the beginning of the war, imports of this metal practically ceased and the supply since then has been comprised almost entirely of small experimental or special lots made occasionally at electric-furnace plants devoted to the manufacture of other alloys. Silicomanganese has been greatly missed by the steelmakers who had become accustomed to it, since its use is attended by certain advantages. Being composed almost entirely of manganese and silicon, its chilling effect, when introduced into molten steel, is much less than that of ferrosilicon or ferromanganese. Then, too, the manganese in silicomanganese is protected from oxidation to such an extent that the amount of manganese in the form of silicomanganese which must be added to the bath is less than when using ferromanganese. Practice has shown this saving in some cases to be more than 10 per cent. To fill the demand for silicomanganese, as well as to manufacture all kinds of ferroalloys, a new electric-furnace plant has been placed in operation at Bay Point, 30 miles from San Francisco, by the Pacific Electro Metals Co. Initially, silicomanganese containing 20 to 25 per cent silicon, 50 to 55 per cent manganese, about 1 per cent carbon, and the remainder iron, is being produced. Later a higher grade of silicomanganese, containing 25 to 30 per cent silicon and 65 to 70 per cent manganese, also will be made. The Pacific Electro Metals Co.'s output of all ferroalloys shortly will aggregate not far from 1000 tons per month.

Located on an 80-acre site, fronting on tidewater and provided with connections to four railroads, the company's establishment comprises a furnace and substation building and an electrode plant, both of reinforced concrete. The latter building was provided in order that the company might be immune from the general scarcity of electrodes. This structure is 40 x 80 feet and has capacity for filling the company's electrode requirements. In addition, it is expected that some of its output will be available for the market. The main furnace building is 50 x 120 feet and 70 feet high. It houses two 3000-kilowatt, 3-phase, and three 300-kilowatt, single-phase, electric furnaces. They are of the standard, open-pit, alloy type, and were designed by the Beckman & Linden Engineering Corp., San Francisco, which had charge of the construction of the plant and now is managing its operation.

One of the larger furnaces now is producing silicomanganese and the other shortly will begin producing ferromanganese. The smaller furnaces will be employed for making ferronickel, ferromolybdenum, ferrochrome, and ferrotungsten. The furnace in which silicomanganese is made has an open top. The raw materials are fed by shovels around the electrode, and the metal is drawn from a tap hole at the bottom of the furnace. The operation of smelting is continuous. The electrodes employed are 24 inches in diameter.

Alternating current for the operation of the furnaces is obtained at a pressure of 22,000 volts from the Great Western Power Co., and is stepped down by seven 1000-kilowatt transformers to a voltage suitable for operating the furnaces. The larger size furnaces have capacity, when operating continuously, for producing 5000 tons of metal each per year. The furnace building is equipped with one 10-ton and one 3-ton crane. The latter is used for lifting out furnaces, and replacing them when changes in analyses of the alloys are to be made. The company





UPPER VIEW IS ONE OF THE 3000-KILOWATT FURNACES READY FOR OPERATION. AT THE RIGHT IS SHOWN THREE 1000-KILOWATT TRANSFORMERS AND AT THE LEFT THE BUS-BAR SYSTEM FOR CONVEYING THE CURRENT

uses carbon waste, which it obtains locally, as a reducing agent. In addition to the two main buildings, the plant comprises cooling and packing rooms, a machine shop, a store room, a service room for the employes, an office building and a labratory for obtaining analyses of the various metals produced. Close to the plant are 10 modern cottages for the housing of employes. These are dwellings of an unusually ornate type and their number is to be enlarged in the near future.

Location is Well Chosen

The location in California not only is an advantageous one from the standpoint of a plentiful power supply, but it is adjacent to the raw materials. The supply of manganese ore is obtained from a point 50 miles distant from the plant. Chromite, tungsten concentrates, and molybdenites also are obtained in California. None of the raw materials used are located further east than Utah. The officers of the Pacific Electro Metals Co. are: President, C. D. Clarke, San Francisco; vice president, J. M. Kroyer, Stockton, Cal.; treasurer, Henry Koster, San Francisco. In addition to the officers, the directors include C. F. Potter and J. W. Beckman, San Francisco. Dana & Co., 111 Broadway, New York, are exclusive sales agents for its products.

New Press Facilitates Shaping of Plates

A new design of rolling press or plate bending machine, hydraulically operated, is just being put on the market by the Baily & Allen Co., Chicago. Its primary purpose is to bend steel plates for shipbuilding purposes, though it can be used equally well for boiler and tank work.

Bilge plates for ordinary cargo ships are 6 to 7 feet wide and 24 to 30 feet long, in thicknesses of 5/8 to 7/8-inch. Rolls to handle this material require a heavy upper roll about 30 inches in diameter and 32 feet long. Recent heavy demand has pushed back delivery dates and new shipyards frequently meet delay in equipping for quick construction. The new machine is constructed partly in structural shops and partly in medium-sized machine shops and is designed to be built quickly.

The device is essentially an extended bulldozer. As shown in the accompanying illustration, it consists of two heavy girders, one above the other, securely tied at the ends. On the lower surface of the upper girder is mounted a continuous set of convex dies 24 inches wide, the full length of the machine, which has a clear opening of 31 feet. On top of the lower girder is a series of 10 hydraulic rams or pistons, carrying on their tops a series of concave dies 24 inches wide.

These dies have any desired curvature and can be changed at will. The plate may be formed cold to a cylinder with a radius of 36 inches or more, with the axis parallel to the long dimension of the press.

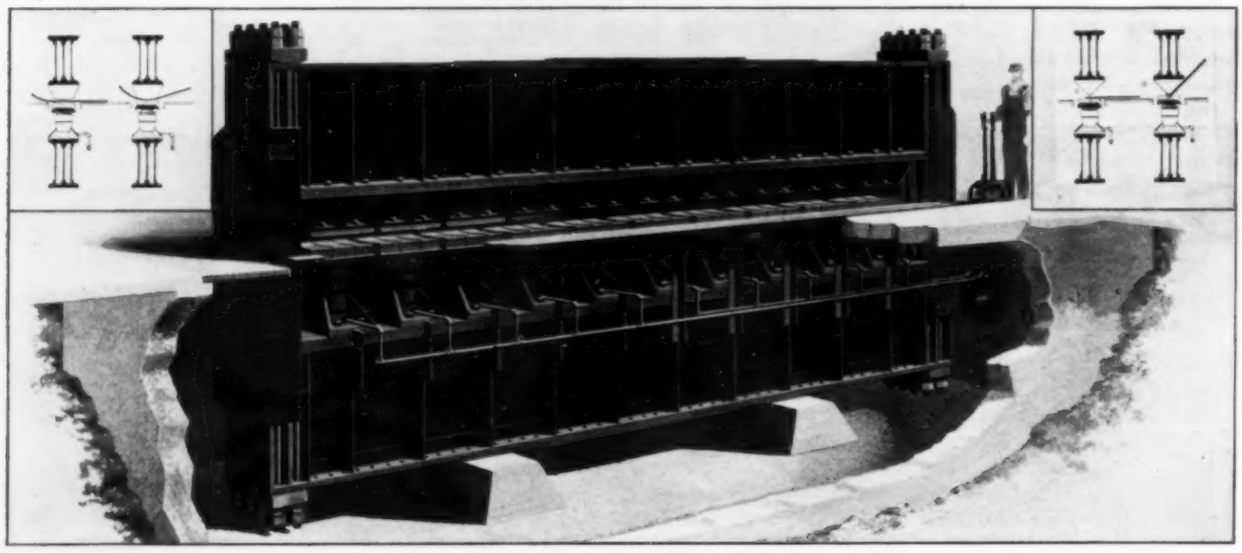
In operation the long edge of the plate is inserted and the plungers set in motion, giving the plate its cylindrical form for about 24 inches of its width. The plate then is moved 24 inches further and a second portion is formed. A series of these operations gives as much curvature as desired.

The length of time required in this machine is said to be the same as in the ordinary bending roll. The plate can be curved to within 1 or 2 inches of the edge. Plates may be bent at right angles to form flanges, this being accomplished by the use of V-shaped blocks and dies.

Canadians Plan to Utilize Copper-Nickel Ore

In a paper recently read before the Canadian Society of Civil Engineers, Lieut.-Col. R. W. Leonard explained the utilization of Sudbury, Ont., ores to produce steel of high physical qualities. In these ores there is a large content of copper and nickel in combination with the iron. The new steel was found to give results under test that were fully equal to those of nickel steel. It showed an ultimate strength of 70,000 to more than 100,000 pounds per square inch, with a yield point of 60,000 to 80,000 pounds per square inch. It also showed properties which would make it satisfactory material for use in the manufacture of ordnance and bridges. The new steel is not yet on the market, but its cost should be low. Direct use of nickel-bearing iron ore is not new, but heretofore instead of trying to use nickel-copper iron ores direct in the smelter, efforts have been made to get rid of the copper. The Canadian experiments however, show that a satisfactory result can be obtained by a special treatment of the ores without making any effort to eliminate the copper content.

A pamphlet describing a new profile and bevel planer, which is said will aid in building wooden vessels, has been published by the National Woodworking Machine Co., Dover, N. H. The machine is a massive unit containing four powerfully-driven 10-inch feed-in rolls and has a duplicate set of feed-out rolls. A set of knives, which will cut an 8-inch circle is situated between the two rolls.



HYDRAULIC PLATE ROLLING PRESS FOR SHIPYARDS AND BOILER SHOPS. LEFT INSET SHOWS PRESS ARRANGED FOR BENDING BILGE PLATES. RIGHT INSET SHOWS PRESS ARRANGED FOR FLANGING

Fig. 1—Small But Powerful. The Tractors in the Test Shop Where They Are Given a Thorough Overhauling Before Being Crated for Shipment in the Manner Shown at the Left

Assembling Tractors in a New Plant

How Cleveland Company in Less Than Year and a Half Attained a Production of 25 Caterpillar Tractors a Day—Description of Departments and Routing System

BY EMIL KREUTZBERG

ALTHOUGH designed primarily for war purposes, the caterpillar tractor has demonstrated its value in agricultural and industrial fields. The scarred battlefields of Europe have tested these machines more thoroughly than will the roughest work in industries at home. Thousands of them are being used in the United States, especially in mining centers, lumber camps and quarries. They are finding extensive application in the great western farming regions, hauling machines which ordinarily required the effort of 40 horses. Smaller machines are in use on farms in many parts of the country displacing the horse for hauling farm machinery.

Plants Spring Up Over Night

Factories for the manufacture of tractors have sprung up almost over night. Many plants engaged in other enterprises a year or two ago are now manufacturing tractors and tanks in large numbers. Among the new companies organized to manufacture tractors is the Cleveland Tractor Co. A year and a half ago its site on the outskirts of Cleveland was a farm, partly under cultivation. The agent for farm machinery who might visit that locality now would be astonished to find three large manufacturing buildings, a fourth nearing completion, and ground broken for a fifth.

The tractor made by the company was developed by Rollin White, president, who designed the White automobile and truck. The magnitude of the new field which he had entered was at once apparent to him and he planned the plant on a large scale. More than 100 machine tools are employed, since the tractor even more than the automobile requires a great number of machine parts.

Buildings of Concrete

All buildings were designed by the George S. Rider & Co., Cleveland, and are reinforced concrete and steel. The main building is 65 x 570 feet. It is occupied by the main offices, assembling department and a portion of the machine shop. Another building, approximately 65 x 475 feet, houses the main machine shop, the warehouse, the bench assembling section and the paint shop. The test shop is 90 x 300 feet and houses the heat treating and testing departments. The buildings were erected by the Sam W. Emerson Co., Cleveland.

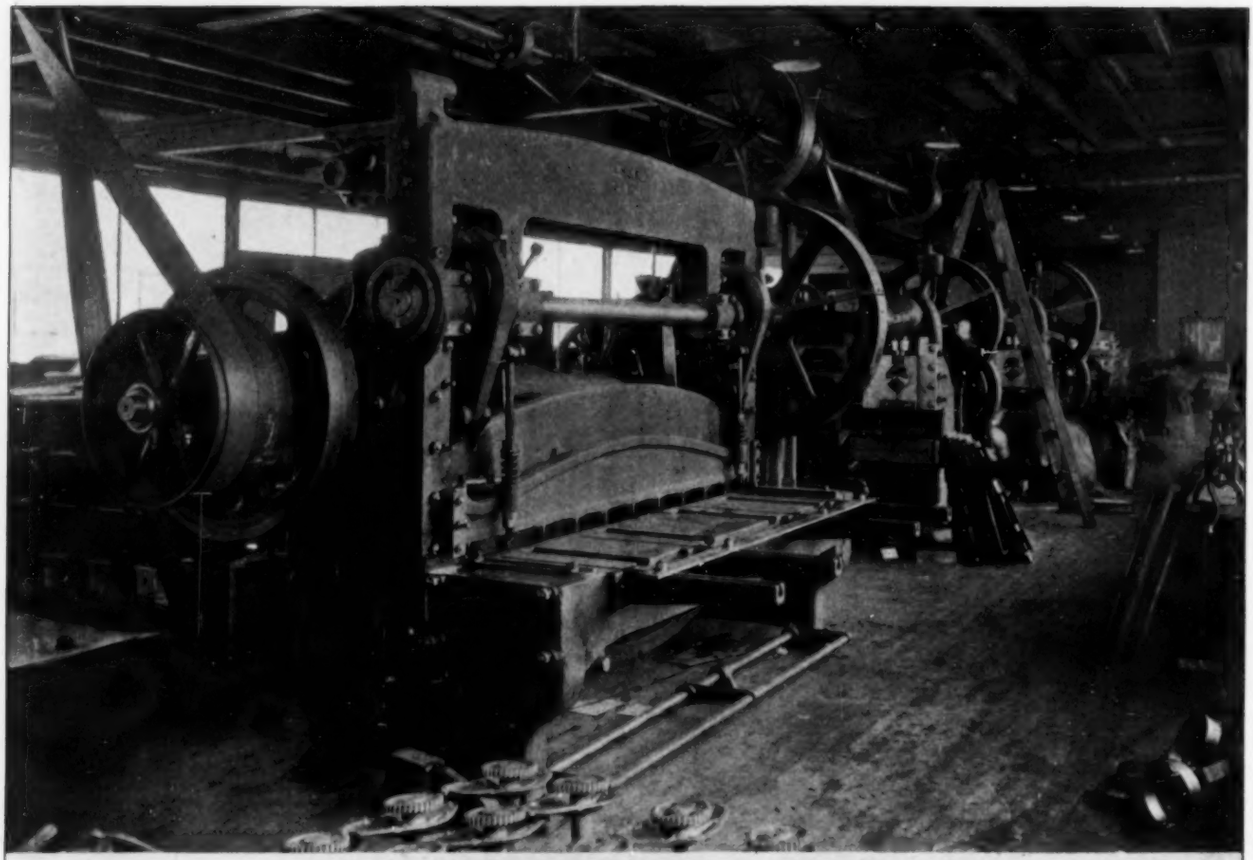
The arrangement of the departments is shown in Fig. 8 and the movement of materials can be traced from the drawing. Beginning at the warehouse, crude material passes through the machine shop, heat treating department if necessary, assembling department, test shop and finally to the shipping room.

A large supply of shafting and castings is stored in the warehouse. The company has no foundry, purchasing most of its castings from Cleveland foundries.

The machine department is divided, the main shop, adjacent to the warehouse being devoted to the machining of smaller parts such as gears, pins, shafts and bushings, and a shop in the forepart of the assembling department being devoted to the machining of the heaviest parts, such as the large internal gears on the inside of the rear tractor wheels, the front and rear tractor wheels and the transmission case. The rough castings and bar stock are conveyed from the warehouse into the main machine shop on electric trucks. The shop is well proportioned, with aisles sufficiently wide to enable two trucks to pass. The bench assembling shop is located just south of the middle of the building. Here such parts as the brakes and clutches, compensation gears and differential shafts are assembled.

The Plant's Equipment

Several large turret lathes built by the Gisholt Machine Co., Madison, Wis.; eight gear shapers made by the Fellows Gear Shaper Co., Springfield, Vt.; two multiple spindle drills furnished by the Motch & Merryweather Machinery Co., Cleveland, and a huge 41-spindle drill manufactured by the National Automatic Tool Co., Richmond, Ind., are among the important machines in the auxiliary machine shop. A Gisholt lathe with a special reaming attachment on the turret



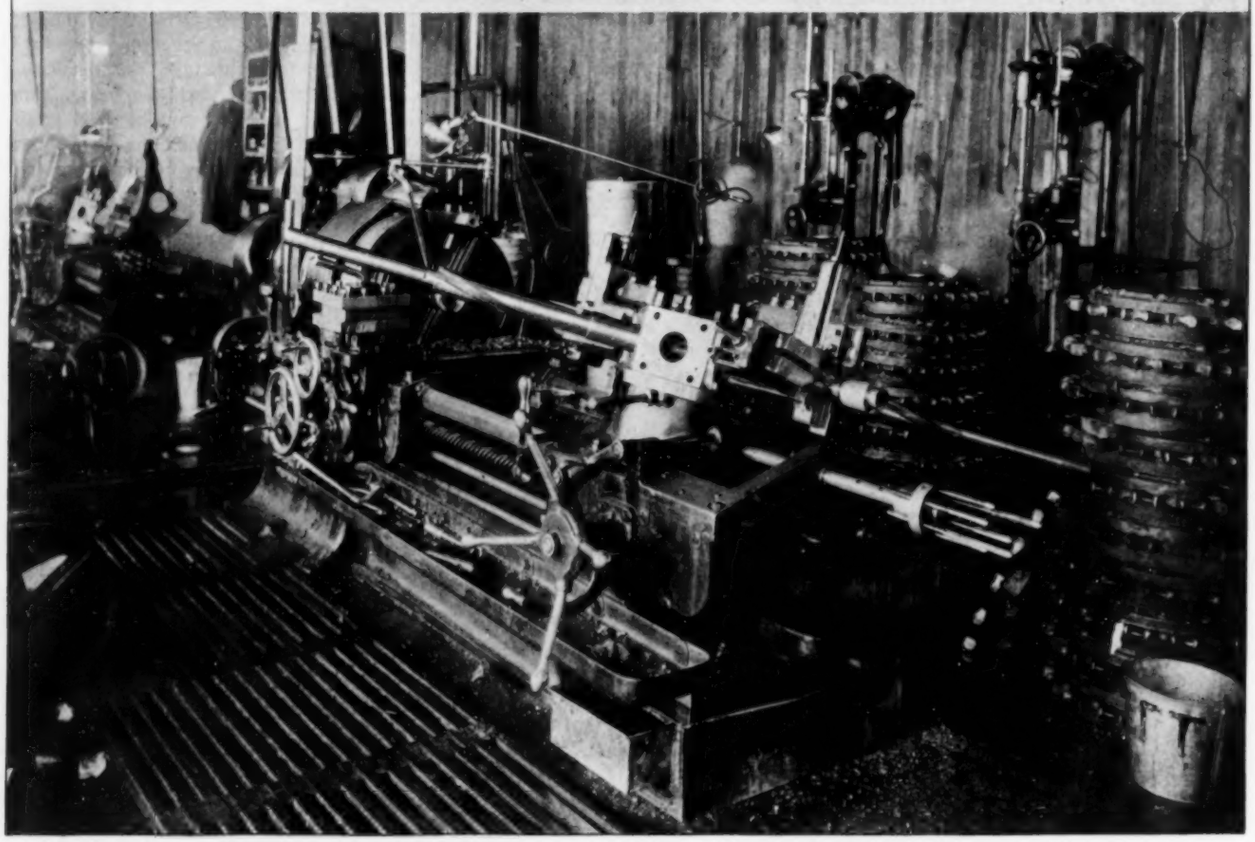


FIG. 2—HEAVY POWER SHEAR FOR TRIMMING TRACTOR HOODS. FIG. 3—SPECIALLY EQUIPPED LATHE FOR REAMING THE CENTERS OF THE FRONT WHEELS. SEVERAL STACKS OF REAR WHEELS ARE SHOWN AT THE RIGHT

is shown in Fig. 3. This is employed for reaming the bearing of the front tractor wheels. One of these wheels is shown on the lathe. Several piles of rear tractor wheels are shown in the background of this illustration. The lugs or projections, which are shown on these wheels, in turning encounter the tread which provides the traction for the machine. Fig. 4 shows the large 41-spindle drill which at one operation drills 41 holes in the transmission case. At one corner of the auxiliary machine shop is a large air compressor manufactured by the Ingersoll-Rand Co., New York, which supplies air for operating the hoists and chippers in the factory. South of the bench section in the main machine shop are two stamping machines and a large power shear, made by the Toledo Machine & Tool Co., Toledo. The power shear is illustrated in Fig. 2, the stamping machine being shown in the background. The shear and stamping machines are used for cutting and in forming the tractor hoods. It is characteristic of the tractor as of most farm machines that all visible parts are painted brilliant green and red. The tractor is assembled on trucks, the trucks running along a narrow-gage track. As the tractor moves along parts are added by the crews assigned to perform specific duties. The first operation is the assembling of the differential shaft and compensation gear in the transmission case. The gear set for the steering mechanism also is placed in the transmission case before the top of the case and the steering wheel are bolted on. The completed transmission case is lifted by an air hoist into a rectangular frame which acts in the capacity a chassis. The engine is lifted into the chassis by means of an overhead monorail system. The engine is the product of the Widely Motor Co., Indianapolis. In successive operations as the tractor moves along, the clutch and brake levers, seat, tool box, gasoline tanks, radiator, wheels, mud guard and tread are added and the tractor finally is taken off the truck under its own power. From the assembling department the machine enters the test shop. Here it is given a thorough overhauling by experienced mechanics before being crated for shipment in the manner shown at the left in Fig. 1. The completed and crated machine is dragged from the test shop to the shipping platform by another tractor. The tread is assemled in a corner of the test shop. It consists of 37 malleable castings which are held together by case-hardened pins, each pin fitting into a bushing. The castings are stored in great piles at the north end of the test shop. As 74 of these castings are required on each tractor and approximately 25 tractors are turned out each day, about 1850 castings are used daily. Two special 6-spindle automatic drills have been placed in operation to drill the pin holes. These machines were supplied by the Foote-Burt Co., Cleveland, and the Baush Machine Tool Co., Springfield, Mass. Each is equipped with a special revolving table on which three castings can be drilled while three others are being placed in position on the opposite side of the table. The heat treating department is located at the end of

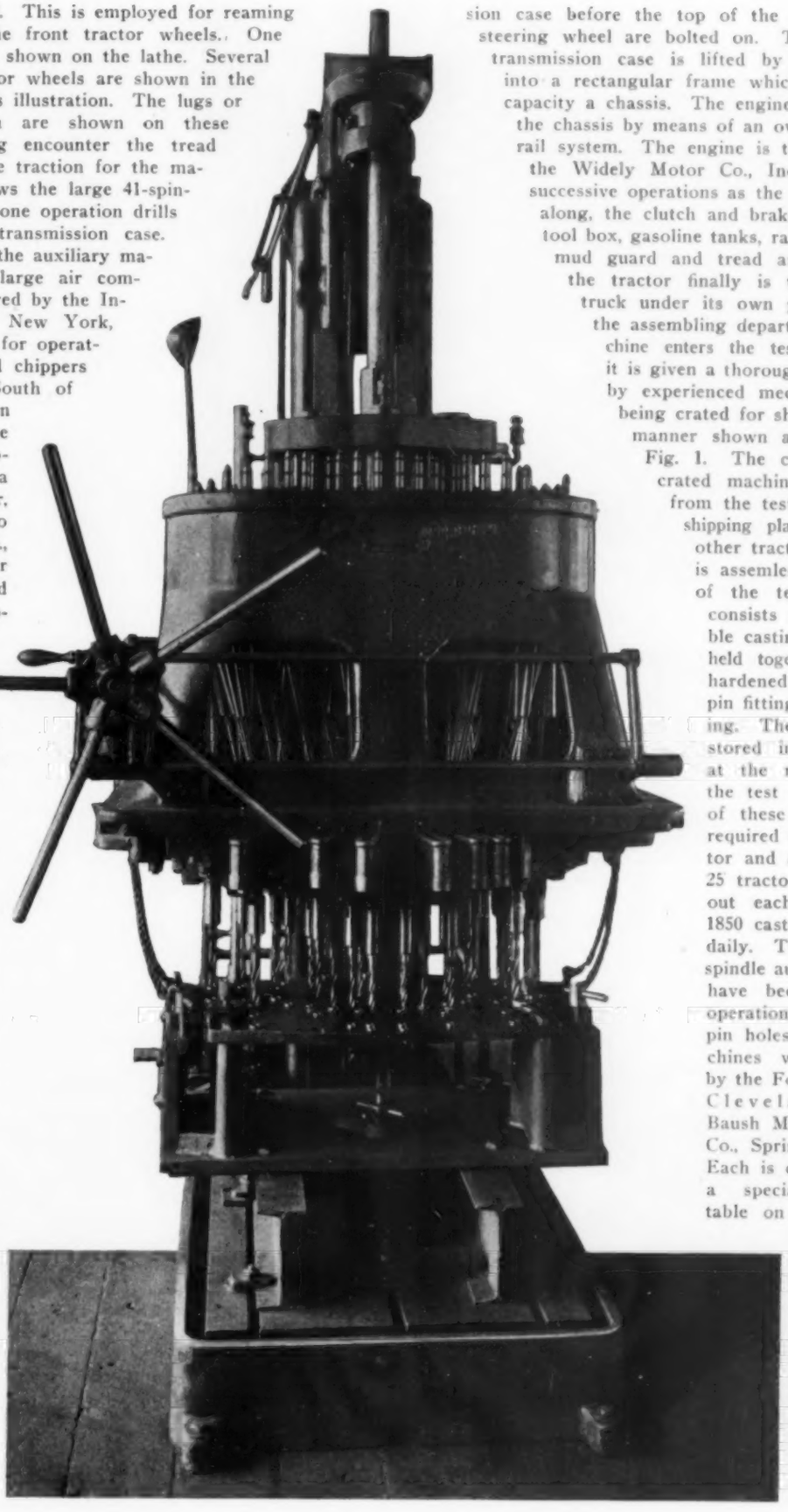


FIG. 4—THE 41-SPINDLE DRILL WHICH DRILLS ALL THE HOLES IN THE TRANSMISSION CASE AT ONE OPERATION

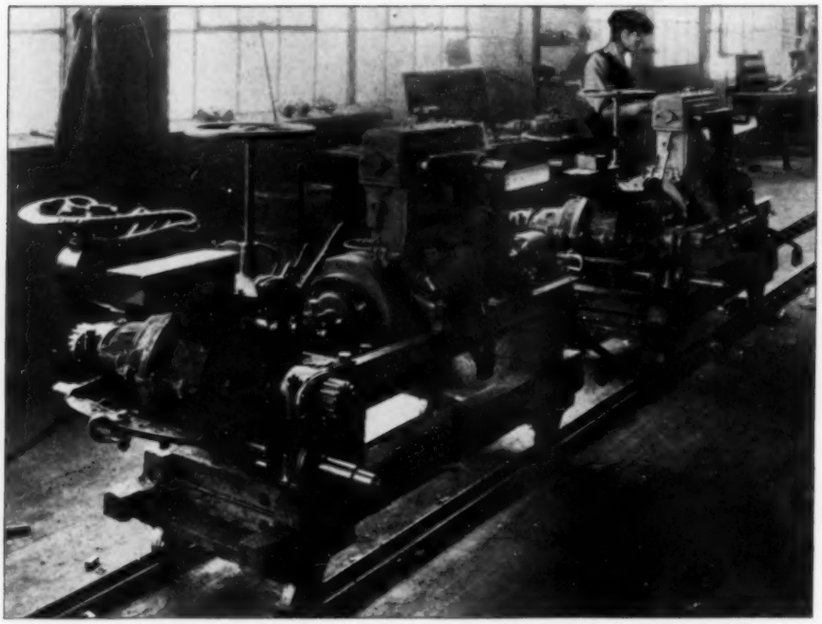


FIG. 5—TWO TRACTORS IN THE ASSEMBLING LINE AWAITING THE ADDITION OF THE FRONT AND REAR WHEELS, MUD GUARD AND TREAD

the test shop. Here five annealing furnaces, manufactured by the Bellevue Furnace Co., and two cyanide furnaces are employed.

A view of the department is shown in Fig. 7. The cyanide furnaces are devoted exclusively to the annealing of the small hollow pins used to connect the castings in the tractor tread. The pins are placed in a deep wire net and they remain in the cyanide bath about 30 minutes, when they are placed in the tank of water, shown in the illustration. The annealing furnaces are devoted exclusively to the annealing of the shafts for the front and rear wheels and the large internally cut gears which fit on the inside of the rear wheels. Both shafts and gears are annealed in cast iron boxes for a period of from 8 to 10 hours and while being treated are covered by a refractory substance to prevent oxidation.

With the addition of the two new buildings it is believed that an output of 100 tractors a day can be attained.

Bigger Buildings or Big Building Slump?

"Standardization in industrial building is an excellent and desirable thing—but as in other directions, it has its limits." This statement recently was made by Gaylord W. Feaga, president of the Gaylord W. Feaga Co., construction engineers, Cleveland, in discussing the present building situation, and the changes which will be effected after Mars, the god of war, lays down his arms, and peace again rules the world. Mr. Feaga stated that in his opinion the question now uppermost in the minds of manufacturers and industrial builders, was, "Will tomorrow be the day of big building or the day of a big building slump?" and this question, he points out, gives a fair description of the uncertainty of the national business mind in regard to industrial improvements and expansion.

FIG. 6—ASSEMBLING THE COMPENSATION GEAR AND DIFFERENTIAL SHAFT IN THE TRANSMISSION CASE. AFTER THIS OPERATION THE TOP OF THE CASE AND THE STEERING WHEEL WILL BE ADDED BEFORE THE COMPLETED UNIT IS DROPPED INTO THE CHASSIS

Personal Service Important

Previous to the outbreak of the war, each separate industry had its own ideas as to the types of buildings to be erected for it. Such industries as the railroads and textile business were in the habit of depending on specialized engineering and construction service for their building work. They dealt with men who planned and built nothing but railway buildings, or nothing but textile works. But since the war, the order of things has been changed. The ranks of these specialized engineers have been in a measure depleted and industries which formerly relied on specialized engineering and building, have been compelled to patronize engineers and builders who to a certain extent worked in a foreign field.

As a whole, Mr. Feaga stated, the building problem for one industry is not unlike that for another, and the proposition which stands out foremost in all building activities is personal service. In handling each construction job, the engineer and builder must find the best possible solution to their client's problem, and after that the builder does best to rely on stable, tested types of buildings, adapted in all details to the client's wants.

Building Operations Unified

An interesting development in the building industry, which Mr. Feaga pointed out, was that engineers and builders were organizing firms which through the close co-operation of engineering and construction, bring about more unified building operation, as planned by the engineers and built by the constructors. As to the standardization of the industrial building business, Mr. Feaga stated that standardization is steadily growing, and is receiving much consideration on the part of progressive industrial builders. He further said much has been done by many firms in the direction of a general standardization of design and erection. The individual service which every owner's undertaking demands, should never suffer from too tenacious a principle of standardization for the sake of standard-

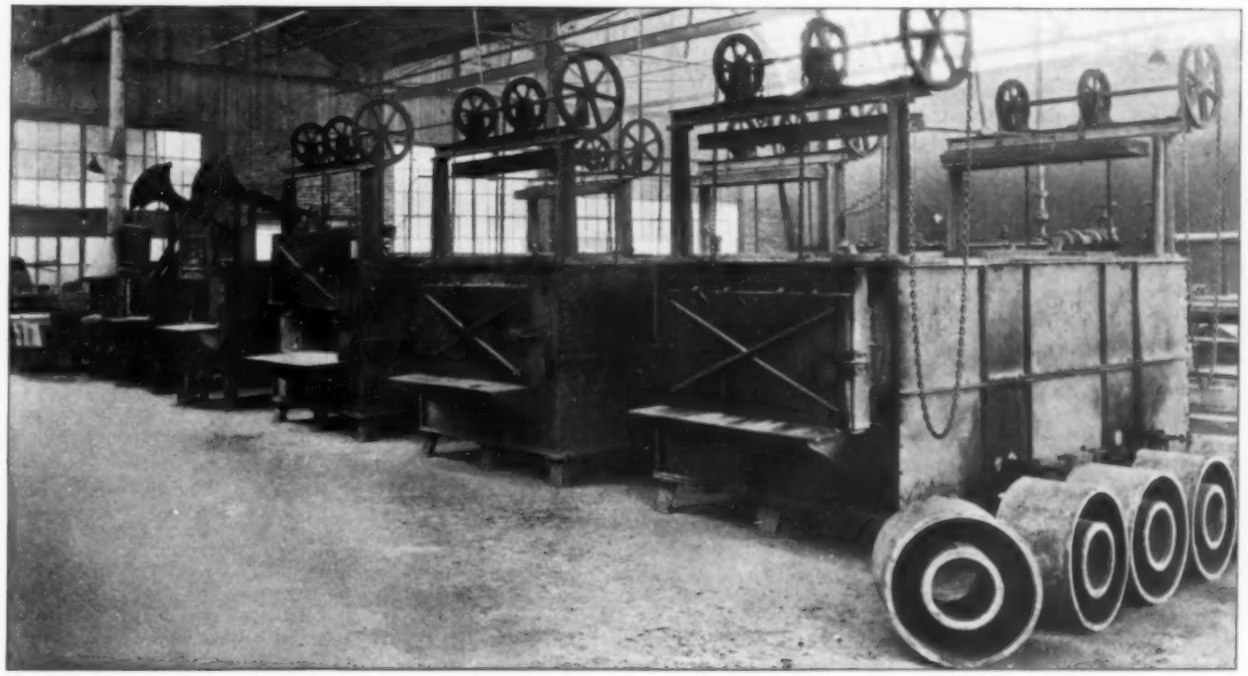


FIG. 7—GENERAL VIEW OF THE HEAT TREATING DEPARTMENT

ization. The owner of a building will be fortunate if he succeeds in retaining a firm of constructing engineers with whom personal service is the predominating idea. Such a firm will give to its clients individual attention."

Consider After-the-War Conditions in England

In England steel manufacturers are devoting considerable thought to the probable status of the industry when the war ends and releases much capacity which is now being devoted to war work. Comment in British trade periodicals indicates a feeling in some quarters that the elimination of the Russian market for the time being may be a factor in bringing about overproduction even during the course of the war. This theory is apparently scouted in other directions, and efforts to obtain higher prices for certain lines are being agitated.

"The situation in the steel trade contains some elements of disturbance," the *Ironmonger* says in a recent issue, "although on the whole it is not unsatisfactory. The large increase in the production of most kinds of steel has caused an unsettled feeling, which has found expression in exaggerated fears of overproduction, particularly of open-hearth and crucible steel. Moreover, it is known that negotiations for an advance in maximum prices have been in progress, and in an instance which has been brought to our notice, a price in excess of the maximum has been charged with the note that it is made 'as arranged with the ministry of munitions.'

"At the moment the position is somewhat puzzling to traders, but official announcement may be expected in a week or so which will definitely clear up the question of prices. No advance need be expected in steel billets of ordinary quality, although it is recognized that the costs of production have increased in many directions. The difficulty may perhaps be met by a subsidy.

"There has been some speculation about the effect of elimination of the Russian markets upon the disposal of production. Assertions are made that the industry is faced with overproduction and that the works will soon be able to place extensive tonnages at the disposal of the trade. There is, however, little likelihood of such a state of things coming about. At present, no doubt, stocks of steel are accumulating at the works, but it is difficult to say how much of this is due to the insufficiency of railroad facilities and how much to excess of production. Those in a position to gauge future national requirements, however, are of the opinion that very little steel will be available for civil use at home and for export, at least for some time to come.

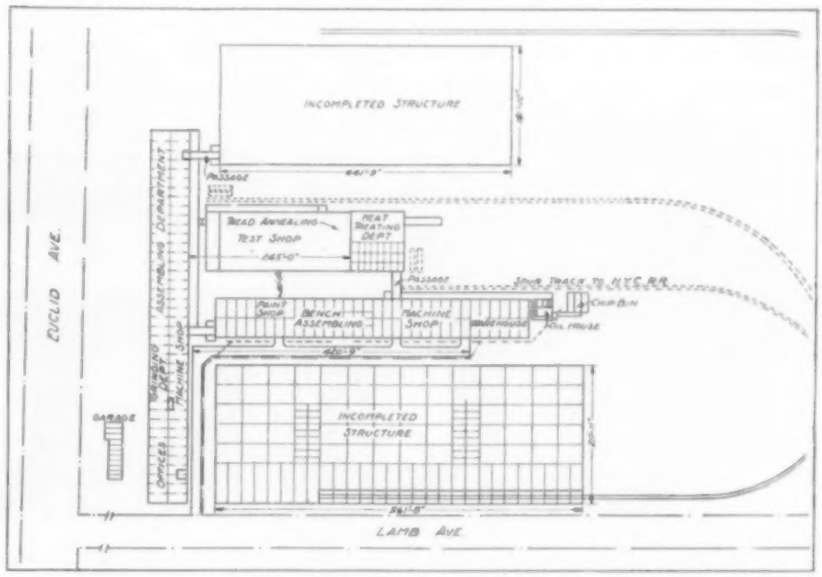


FIG. 8—PLAN OF BUILDINGS AT CLEVELAND TRACTOR PLANT

Roller Bearings For Steel Mills

How the Substitution of Roller Bearings For Ordinary Plain Journals on Bar Mills, Plate Mills and Castor Beds Has Reduced Manufacturing Costs by Eliminating Unnecessary Friction

BY EARL E. EBY

PROBABLY no other feature of steel-mill design has been more neglected than that of bearings. From time to time certain improvements have been made, such as the use of better bearing metals, more liberal bearing surfaces, and, in many cases, ring and chain oiling features. Occasionally, to insure more reliable operation, forced lubrication and water cooling systems have been employed.

The inherent weakness of the plain bearing lies in the fact that the journal must always be supported on an oil film. If this film is destroyed for even a short time, disastrous results soon follow. The designer may have made liberal provision for lubrication, but unless his ideas are carried out, the bearing will not receive the desired lubrication. High temperature, dirt and lack of attention all tend to destroy this oil film. The oil, becoming laden with metal from the bearing, soon loses its lubricating qualities.

Ball and roller bearings do not depend upon this film of oil for satisfactory operation. They are, therefore, much more reliable than plain bearings if the mechanical features of the bearings are suitable for the application. The substitution of rolling members for sliding parts reduces both the friction and the cost of lubrication.

Anti-friction bearings may be divided into two general classes, those containing balls and those containing rollers. Each can again be subdivided. In the case of the ball bearing, we have the cup and cone and the annular types. With the roller bearing, we have the straight and the tapered types employing a solid roller, and also a straight type employing a flexible roller.

THE proper maintenance of rolling-mill bearings has been a serious problem for many years owing to the fact that the type of plain journal used often consumes unnecessary power, because of insufficient lubrication. The author of this paper, who is connected with the Hyatt Roller Bearing Co., New York, has made an exhaustive study of the application of roller bearings to rolling mill service and in this article he points out how roller bearings reduce production costs by eliminating friction.

Fundamentally, each one of these bearings is similar, consisting in all cases of an inner and outer steel race, between which operates the ball or roller, as the case may be. Sometimes, in the case of a roller bearing, the inner race is omitted. The difference between one type and the other is purely a difference between the shape or design of the race in conjunction with the shape of the rolling element. The races, the balls and the rollers in all cases are made of essentially the same kind of material. This material must be of the finest quality possible. It must be properly heat-treated and must be ground to close limits after heat-treatment.

It will therefore be seen that each type of bearing and its application is entirely a matter of design for the particular service. In the ball bearing, we have a point contact. In the double-row ball bearing a 2-point contact, while in the roller bearing we have a line contact. Because of its line contact, a roller bearing is not subject to deterioration from high-contact loads. In the case of the flexible roller, this line contact is enlarged to a surface contact which further reduces the unit pressure under the roller.

It might be interesting to note the results which have been obtained with roller bearings operating in steel-mill service. The Ohio works of the Carnegie Steel Co. changed over two tables of a billet mill to flexible roller bearings about four years ago. The power input was reduced 50 per cent and was maintained at this figure. When the bearings were examined at the end of three years, it was found that the rollers still showed the original grinding wheel marks, and the bearing races and the journals were in excellent condition. These results determined the type of bearing to be used on nine new mills being built at the Ohio works for the McDonald plant. These mills, including the mechanism on the cooling

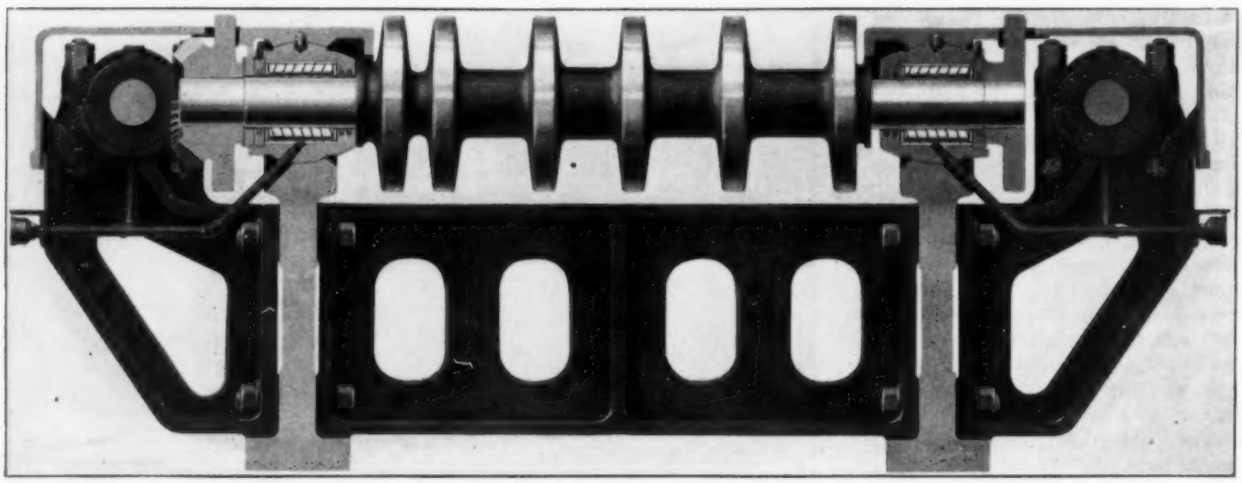


FIG. 1—SECTIONAL VIEW OF A TYPICAL PLATE-MILL ROLL EQUIPPED WITH ROLLER BEARINGS. LUBRICANT IS FORCED IN AT THE BOTTOM OF THE JOURNALS BY MEANS OF GREASE CUPS

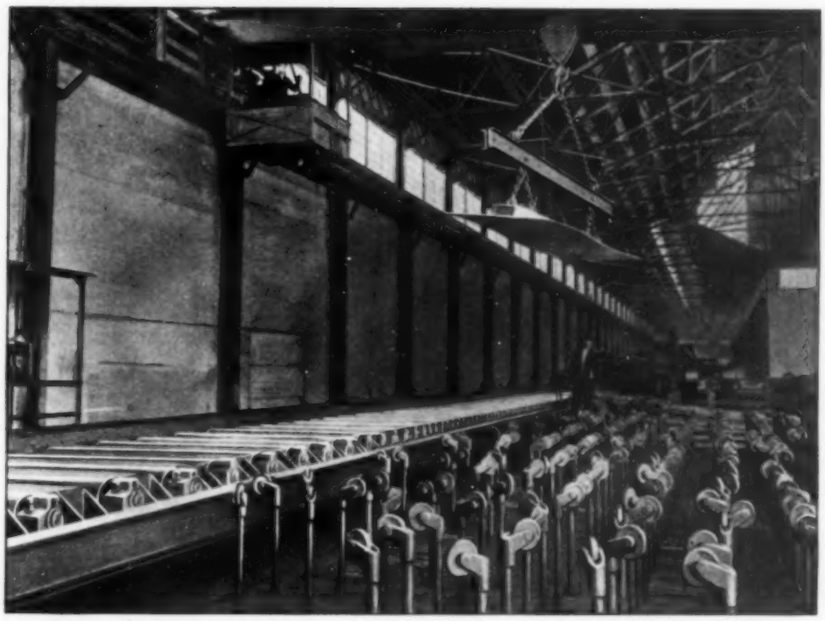


FIG. 2—CASTOR BED OF A LARGE PLATE MILL. THIS BED IS EQUIPPED WITH ROLLER BEARINGS

beds, represent the largest single installation of roller bearings in the country and when complete will contain two 8-inch, two 10-inch and one 12-inch hoop mills; one 18-inch band mill, one 8-inch, one 10-inch and one 14-inch bar mill.

It is thought that the installation cost of the roller bearings was no greater than that of the plain bearings because the motor rating was reduced 50 per cent. This reduction in the size of the motors also affects the cost of controllers, transmission lines, transformers and switchboard as well as the generating equipment itself. In the case of a certain large structural mill, the roller bearing was compared in cost to a half brass ring-oiling bearing. This company figured that by using the flexible roller bearing they could save $6 on each box. This difference in cost was made possible by the saving of considerable cast iron as well as the cost of the brass in the plain-bearing box. The simple box design for the roller bearing eliminated two set-ups for planing and one set-up for boring. This meant a material saving in labor and time as compared to the split ring-oiling box. So in practically every case, the cost of a roller bearing installation is no greater than that of a plain bearing. A typical roller bearing design for a bar mill is shown in Fig. 3. In addition to the foregoing bar mills, the American Steel & Wire Co. has installed at the Cuyahoga works a wide flat mill equipped with roller bearings. The Pittsburgh Steel Products Co. is also building some roller-bearing tables.

The principal advantage of roller bearings in small mills is their reliability, even if the lubrication is neglected. It is possible to operate these tables for three months with only one charge of lubricant. As an example of the lubricating advantages gained by the use of flexible roller bearings, it can be stated that the regular lubricating period of ingot cars is once a month for a company operating 145 cars. On charging-box cars, this bearing has operated two and a half years on one charge of grease. While this latter service was to a certain extent exceptional, it indicates the ability of the roller bearing to operate for long periods of time, even when lubrication is neglected.

Another advantage is that bearing friction is reduced between 50 and 75 per cent as compared to plain bearings. The motor rating can therefore be reduced in this same proportion, except on reversing tables with a large inertia load. The torque required to drive a roller-bearing table is practically constant because the bearing friction is not affected by high or low temperatures. Another factor affecting the motor rating on plain-bearing tables and which is not found with roller bearings, is that frequently all bearing caps are drawn down so tight that it is scarcely possible for the motor to operate the tables. This is particularly true on plain-bearing side shafts when it is sometimes necessary to replace a bearing with a new brass of greater thickness than the rest. With the roller bearing, all this trouble is eliminated, so overmotoring is not necessary.

As the roller bearing does not wear down in service to any appreciable extent, gears are always in mesh. This results in longer gear life and less noise. As the table rollers are maintained at the same level each roller carries its share of the load.

The principal advantage of roller bearings on the tilting tables of plate mills and blooming mills is the extreme reliability and durability of this type of bearing. The bearings on these tables must be lubricated more frequently than on the lighter tables. The period, however, depends upon the design of the tables and the length of time the plates are allowed to remain stationary on the tables. The bearings are subjected to the hardest service and it is practically impossible to keep a plain bearing properly lubricated. The flexible-roller bearing has excellent lubricating qualities while at the same time it is particularly adopted to shock

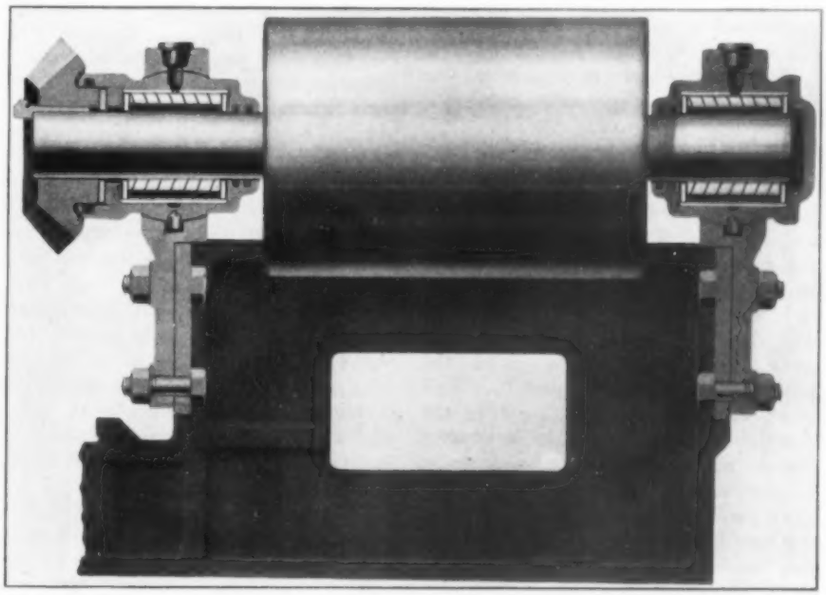


FIG. 3—SECTIONAL VIEW OF A BAR-MILL ROLL DESIGN. ROLLER BEARINGS ARE USED IN THIS INSTALLATION

loads. It is therefore not necessary to dismantle the table at frequent intervals as is necessary with plain bearings. The cost of bearing failures caused by reduced outputs runs into hundreds of dollars, unless these bearing replacements are made when the mill is shut down. Two large plants abandoned brass bearings in favor of roller bearings several years ago and found a distinct advantage by this change. These solid rollers were used on a 134-inch plate-mill tilting table and also on a skelp mill at another plant. Roller bearings for a plate mill are shown in Fig. 1.

Flexible Roller Bearings Used

This mill was designed and built by the United Engineering & Foundry Co. for the Brier Hill Steel Co. and consists of a 32 x 84-inch tandem plate mill and one 38 x 132 inch, 3-high plate mill, all tilting tables being equipped with roller bearings. It is also building similar roller bearing tables for the Tata Iron & Steel Co. and the Tennessee Coal, Iron & Railroad Co. The latter company has also ordered from the United Engineering & Foundry Co. a roller-bearing tilting table for the combination bar and structural mill. All runout tables, including side shafts, will be equipped with flexible roller bearings. These tables were designed and built by the Tennessee Coal, Iron & Railroad Co.

In addition to the foregoing installations, mention may be made of the blooming-mill shear table which is being built by the Jones & Laughlin Steel Co. and an 84-inch plate mill which is being built for the Penn Seaboard Steel Corp. The Homestead Steel works has just completed designs for a 140-inch plate mill which will be equipped with flexible-roller bearings, while the Jones & Laughlin Steel Co. has designed a 128-inch plate mill incorporating the flexible roller bearing.

Bearings For Castor Beds

The present labor situation has brought forward another interesting application of roller bearings. The plate castor has remained unchanged from the time of its invention to the past year. By installing roller bearings in the wheel and in the head of each castor, it is possible to move the heaviest plates with little effort. Each castor can easily swing around to the direction in which the plate is moving. Unless the castors move around easily, it requires a great deal of force to move the plates over the castor bed. If the floor plates are placed in concrete, and the castor bed is properly leveled up, it should always remain level, because there is no place for the wear to occur. Thus all the castors will carry a part of the load as the plate is moved over the table.

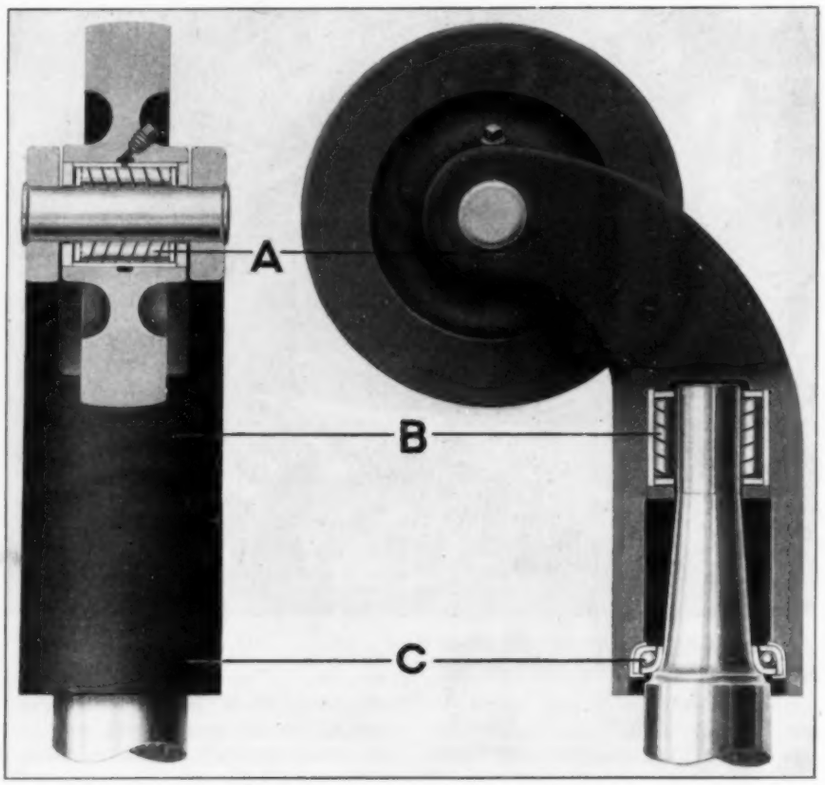


FIG. 4—SECTIONAL VIEW OF ROLLER AND BALL BEARINGS FOR CASTORS. A IS THE CASTOR ROLLER, B THE ROLLER BEARING ON WHICH THE CASTOR SWIVELS AND C THE BALL THRUST BEARING

The first installation of these castors was on the Liberty plate mill at the Homestead steel works. This installation required 5000 castors. All castors on the 204-inch plate mill of the Lukens Steel Co., the 110 inch plate mill of the Tennessee Coal, Iron & Railroad Co. and the 84 inch plate mill of the Penn Seaboard Steel Corp. will be equipped with roller bearings. The Cambria Steel Co., National Tube Co., Allegheny Steel Co., Otis Steel Co. and others have also ordered roller-bearing castors. Any plant handling plates around shears and punches can reduce labor to a minimum by means of roller-bearing castors. Each shear or punch should be provided with a castor bed of sufficient size to hold enough plates for the operators' immediate use. This will relieve the overhead crane and allow it to supply plates to other castor beds. If castor lanes are provided, plates can be moved from one place to another without the use of the overhead crane. A castor bed equipped with roller bearings is shown in Fig. 2, and a sectional illustration of the type of castor used is illustrated in Fig. 4.

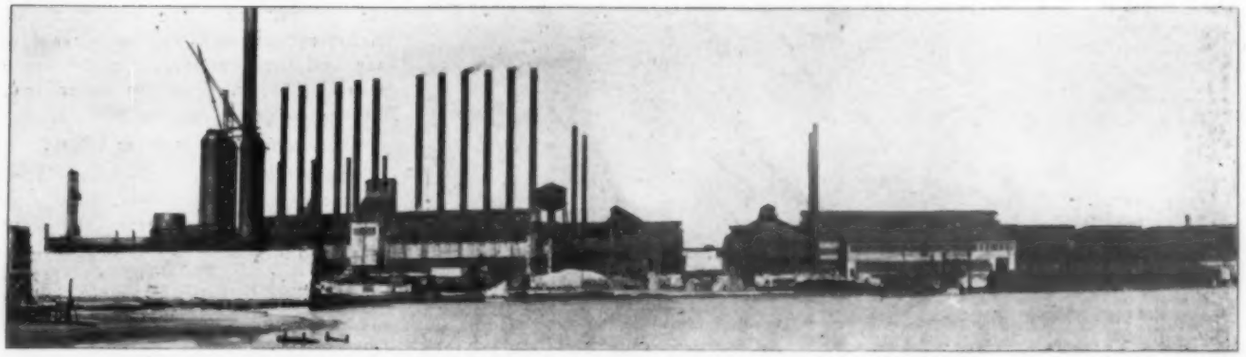
The flexible-roller bearing has been extensively used on ingot cars, charging box buggies, ladle cars, etc. At the present time, approximately 1200 cars are in service throughout the country. So it is evident that the flexible roller bearing has successfully met the severe bearing service prevailing in the average steel plant.

How to Cut Coal Bill

The scarcity of coal last winter and the recent warnings of the fuel administration regarding the possibility of a shortage next winter emphasize the need for greater economy in the use of fuel. The present high rate of production is still insufficient to supply all needs and there seems to be no possibility of an increase in the output of the mines sufficient to satisfy every demand.

There are two possible results of this fuel shortage; either certain industries must close down or more work must be done with the coal available. The engineering experiment station of the University of Illinois has just issued a 90-page booklet printed in four colors which shows that the average small power plant can save 15 per cent of its fuel by the exercise of greater care in equipment and operation. This means a saving of 12,000,000 or 13,000,000 tons per annum if applied throughout the country.

The purpose of the publication, the title of which is "Fuel Economy in the Operation of Hand Fired Power Plants," is to present to owners, managers, superintendents, engineers, and firemen helpful suggestions.



Part of the Mark Mfg. Co.'s Plant Showing Blast Furnace Under Construction, and Boiler-House, Heating Furnace and Plate-Mill Buildings

Independent Chicago Works Merge

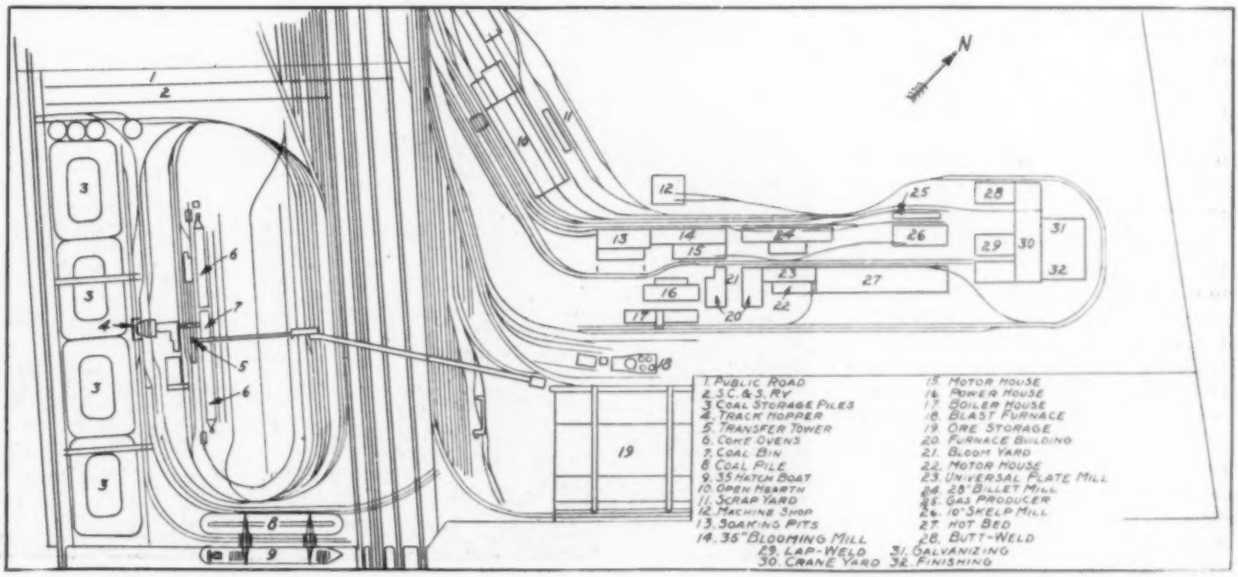
Iroquois Furnace Co., Leading Merchant Iron Producer of District and Mark Mfg. Co., Maker of Tubular Goods and Oil-Well Supplies, Joined Into Steel & Tube Co. of America, New Corporation

TWO important iron and steel operators of the Chicago district, the Mark Mfg. Co. and the Iroquois Iron Co., have been merged under the name of the Steel & Tube Co. of America, a new corporation This brings together under one management a yearly output of 750,000 tons of pig iron and of 450,000 tons of ingots. The Iroquois Iron Co. is the most important producer of merchant pig iron in the Chicago district while the Mark Mfg. Co. has been widely known for 30 years as a manufacturer of tubular goods and well supplies.

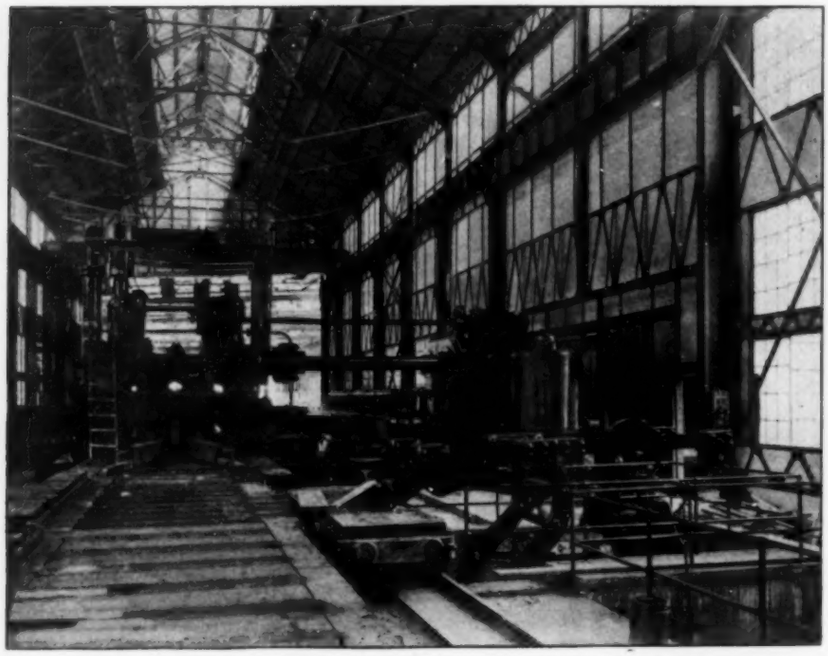
The Steel & Tube Co. of America is self-contained. It has a controlling interest in ore mines, long-term contracts for iron ore and a contract for the entire coke output of a by-product oven plant of 120 ovens now nearing completion. The ovens are located adjacent to the company's Indiana Harbor properties.

The properties of the new corporation include: Six blast furnaces, a bessemer steel plant, an open hearth steel plant, and a blooming, billet, skelp, plate and pipe mills. Five of the blast furnaces and the bessemer plant are located at South Chicago. One of the blast furnaces, the open-hearth plant, and the blooming, billet, skelp, plate and pipe mills are located at the Mark plant at Indiana Harbor. The blooming, billet and plate mills are shown in the accompanying illustrations. At Zanesville, O., the Mark Mfg. Co. has a pipe mill, consisting of two butt and two lap furnaces; at Evanston, Ill., a pipe mill, consisting of two butt furnaces and a well-supply department.

The new steel plant of the Mark Mfg. Co. is situated at Indiana Harbor, 19 miles from Chicago. It lies on both sides of the railroad traversed by the New York Central, Baltimore & Ohio, Elgin, Joliet & Eastern, and Indiana Harbor Belt railroads. It has a harbor in the form of a government ship canal which is dredged to a depth that will accommodate the largest lake vessels at the company's docks. Aside from rail and water transportation facilities and un-



LAYOUT OF THE BLAST FURNACE, STEEL AND COKE OVEN PLANTS OF THE MARK MFG. CO. THE SITE WAS MADE BY FILLING IN LAKE MICHIGAN



28-INCH, 2-HIGH BILLET MILL SHOWING CROP SHEAR IN THE DISTANCE

limited water supply for cooling and other purposes, the site possesses ample acreage for future growth. The steel plant is nearly completed, and is modern in every respect. The plant contains the following departments: A 600-ton blast furnace, which is nearly completed; four 90-ton, open-hearth furnaces; a 35-inch, 2-high reversing blooming mill which is driven by a 15,000-horsepower Westinghouse motor; a 28-inch, 2-high reversing billet mill which is driven by a 5000-horsepower motor; a 10-inch continuous skelp mill which is driven by two 2000-horsepower motors; a 42-inch universal plate mill which is driven by an 8000-horsepower reversing motor, and one butt and two lap-weld pipe mills. Adjoining the Mark plant, the By-Products Coke Corp. is now building a coke plant consist- of 120 ovens which will furnish coke to the steel plant and the Iroquois blast furnaces. A layout of the coke-oven plant is shown in the accompanying illustration.

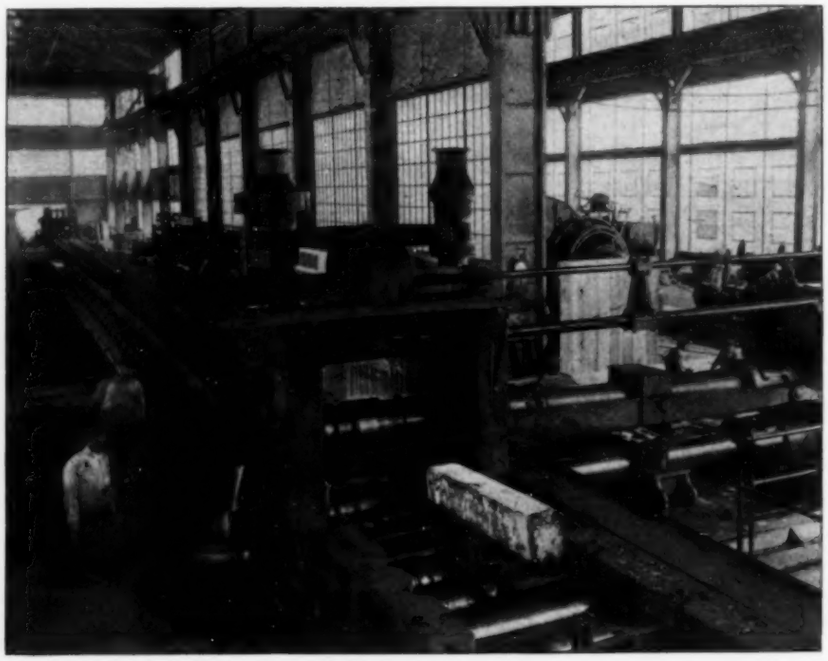
Preliminary work on the steel plant was begun in July, 1916. The ground upon which the plant was built was made by filling in Lake Michigan. It is approximately 700 feet wide and extends 3000 feet out into the lake. The depth of the water at the outer end is about 25 feet. The lake supplied the soil with which the fill was accomplished. It also furnishes a means of transportation to and from the plant and affords unlimited quantities of water for all purposes.

Pumping for the fill started July 7, 1916, but it was not until Sept. 12, 1916, that the filling had progressed sufficiently to permit the laying of tracks for cars on the made ground. On Sept. 18, 1916, the first piling for building foundations was driven. The soaking pits and billet mill were placed in operation Sept. 17, 1917, just one day within a year of the driving of the first pile. At the time the piles were driven, the ground elevation was but 4 feet above the lake level, but as the building construction progressed, filling was continued until the land was 16 feet above the surface of the lake. The buildings and machinery, as well as the blast furnace and the ore dock, rest on foundations of piles. For the latter two, 70-foot wooden piles were driven.

Construction Progress Rapid

The 10-inch skelp mill was placed in operation Oct. 15, 1917, just nine days within one year from the time the first piling for the foundations was driven. When work was started on the foundations, Oct. 24, 1916, there was no land from which to drive piles, and the work was done with a floating pile-driver. The first product of the skelp mill was shipped to other plants of the company on its first day of operation. The mill is located 1800 feet north of where the shore line existed a year before, and at a place where there was 18 feet of water. Inasmuch as the floor line is now 16 feet above the lake level, the total fill at this point amounted to 34 feet.

The first piles for the universal plate mill building were driven April 14, 1917. The mill was placed in operation April 1, 1918, or 351 days after construction was begun. When all mills were placed in operation they were supplied with power from the company's own plant. The foundations for the building and machinery of the power plant were started March 1, 1917. Six months later power was being generated for the mills. The power house contains two 6250-kilovolt-ampere turbo generators and two 12,500-kilovolt-ampere turbo generators, all of Westinghouse design. The entire plant is electrically



35-INCH BLOOMING MILL EQUIPPED WITH HYDRAULIC SCREWDOWNS

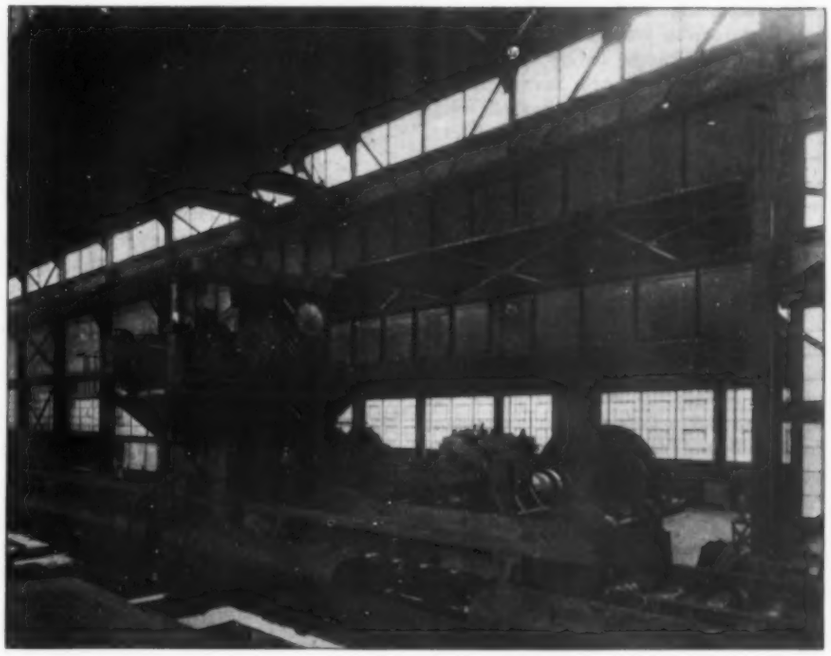
driven. Steam is supplied these generators by twelve 600-horsepower boilers.

Blast Furnace Equipment

The ore dock is 550 feet long. The ore bridge which is of the Hoover & Mason design, is 562 feet long. It is equipped with a grab bucket of 15 tons capacity. Two Hoover & Mason unloaders which are equipped with 7½-ton grab buckets have an unloading capacity of 400 tons per hour each. The ore yard is divided into three sections and has a total ore storage capacity of over 800,000 tons. Adjoining the manufacturing property on an area of approximately 200 acres, there has been completed an industrial village for the employes. There are under roof and practically completed at present 188 workmen's dwellings. Plans are completed for stores, a school house and other buildings.

The Iroquois Iron Co. has two plants at South Chicago, including five blast furnaces. A description of these plants was given in the Jan. 4, 1912, issue of The Iron Trade Review. On this property is located the bessemer department of the Mark Mfg. Co., which started operations in January, 1917. The last furnace which is a 600-ton stack was blown in March 5 of this year. A description of this furnace was given in the May 16, 1918, issue of THE IRON TRADE REVIEW. The others consist of two 400-ton furnaces, built in 1911 and 1912 at the new plant, and one 350-ton and a smaller furnace at the old plant. The smaller furnace is now running on ferromanganese. The iron company has adequate coke space, ample storage capacity, ore bridges, pig-casting machine and is making acreage which will allow of extensive expansion. The company will continue as a maker of merchant pig iron.

The personnel of the merged company includes members of the firm of Semet-Solvay Co., New York; Mark Mfg. Co.; Iroquois Iron Co.; Pickands-Brown & Co.; Pickands, Mather & Co.; the Newport Mining Co., and Elkhorn Piney Coal Mining Co. The executive officers are Clayton Mark, chairman of the board of directors; Ferdinand Schlesinger, chairman of the executive committee; A. A. Schlesinger, president; and T. Boynton, Anson Mark and Clarence Mark, vice presidents.



UNIVERSAL PLATE MILL SHOWING SLAB KICK-OFF IN FOREGROUND

Those Who Will Buy For Uncle Sam

Purchasing Officers, Their Addresses and What They Handle Are Listed

FOR the assistance of those who seek to do business with the government, the following list of purchasing units, with addresses and the classes of materials handled, should prove valuable:

WAR DEPARTMENT

Ordnance Department

Procurement division, Sixth and B streets, Washington.

Cannon and artillery; apparatus and machinery for service and maneuver of artillery; artillery ammunition; small arms; small-arms ammunition and accouterments; tools, machinery, and materials for ordnance service; tanks; bombs and trench-warfare materials; testing appliances, instruments, etc.; optical instruments; steel mill products; office supplies.

Corps of Engineers

General engineering depot, 1438 U street, Washington.

Paints; railway construction materials, machinery, and tools; locomotives and rolling stock; electrical equipment and supplies for overseas; sawmill and woodworking equipment; demolition explosives; mechanical rubber goods; office supplies; chain.

Quartermaster's Corps

Eighteenth street and Virginia avenue, Washington.

Textiles, yarns, and threads; cotton and wool; clothing and personal equipment; rubber and rubber goods (other than mechanical); laundry equipment and supplies; reclamation, reduction, and repair plants and equipment; food; forage; horses and mules; harness and horse equipment; vehicles; motor vehicles; hardware; kitchen equipment; tobacco; office supplies.

Surgeon General's Office

Medical department, general purchasing office, Seventh and B streets, Washington.

Medicines, surgical instruments, surgical dressings, dental supplies, veterinary supplies, hospital equipment, sanitary appliances, office supplies.

Construction Division

Procurement branch, Seventh and B streets, Washington.

All materials and articles entering into construction projects, such as buildings, wharves, roads, sewers, power stations, etc., in the United States, including lumber, roofing, hardware, heating, plumbing, refrigerating, ventilating, water supply, sewage disposal, kitchen equipment, fire apparatus, light and power, office supplies.

Aircraft Production

Director of purchases, 119 D street N. E., Washington.

Airplanes and parts; airplane engines and parts; balloon equipment; special aircraft chemicals, paints, and varnishes; aircraft lumber, veneers, and ply wood; airplane fabrics; aviation clothing; castor oil and castor beans; office supplies.

Signal Corps

119 D street N. E., Washington.

Batteries, technical instruments, telephone and telegraph line materials, telephone and telegraph wire and cable, field glasses, radio apparatus, telegraph apparatus, telephone apparatus, wood distillates, office supplies.

Edgewood Arsenal

Purchase section, 311 West Monument street, Baltimore.

Acids and chemicals.

Supply Division

Mills building, Washington.

Office equipment and supplies.

Gas Defense

Procurement department, F group, Seventh and B streets, Washington.

Gas masks, special gas defense appliances.

DEPARTMENT OF STATE

All supplies for the department proper are ordered by the chief clerk; supplies for the consular service by the chief of the consular bureau, and those for the diplomatic service by the chief of the diplomatic bureau, and all supplies are purchased, as far as possible under the contracts awarded by the general supply committee.

WAR TRADE BOARD

All contracts are awarded through the purchasing agent, A. E. Klinger, Twentieth and C streets N. W., Washington. Purchases for branch offices must all be placed through this purchasing agent when they are in excess of $5.

U. S. FOOD ADMINISTRATION

All purchasing is done through open competitive bids to the supply division, of which B. F. Durr is chief.

In each state and in Porto Rico, Alaska, and Hawaii there are federal food administrators who are authorized to purchase office supplies without reference to Washington. All the vouchers, however, for expenditures in the states pass through the Washington office for approval.

INTERSTATE COMMERCE COMMISSION

All purchases and the awarding of contracts are under the direction of Chief Clerk and Purchasing Agent W. M. Lockwood, interstate commerce commission, Eighteenth street and Pennsylvania avenue N. W., Washington.

FEDERAL RESERVE BOARD

All purchases are made through the office of the secretary of the federal reserve board, treasury building, Washington.

DEPARTMENT OF COMMERCE

Office of the secretary (general department and bureau supplies), E. W. Libbey, chief clerk, room 719, Commerce building, Nineteenth street and Pennsylvania avenue N. W.

Bureau of the census, Thomas J. Fitzgerald, chief clerk, room 518, Commerce building.

Bureau of foreign and domestic commerce, Nicholas Eckhardt Jr., chief clerk, room 1120, Commerce building.

Bureau of standards, S. W. Caywood, purchasing officer, room 300, South building, Connecticut avenue and Pierce Mill road.

Bureau of Fisheries, I. H. Dunlap, assistant in charge of office, room 5, Fisheries building, Seventh and B streets S. W.

Bureau of lighthouses, district lighthouse inspectors, as follows:

District—Address.

1st—Portland, Me., Y. M. C. A. building.
2d—Boston Customhouse.
3d—Tompkinsville, N. Y.
4th—Philadelphia P. O. building.
5th—Baltimore New Customhouse.
6th—Charleston, S. C., Old P. O. building.
7th—Key West, Fla.
8th—New Orleans Customhouse.
9th—San Juan, P. R.
10th—Buffalo Federal building.
11th—Detroit P. O. building.
12th—Milwaukee Federal building.
13th—Rock Island, Ill., Federal building.
14th—Cincinnati Customhouse.
15th—St. Louis Customhouse.
16th—Ketchikan, Alaska.
17th—Portland, Oreg., Customhouse.
18th—San Francisco Customhouse.
19th—Honolulu, Hawaii, McCandless building.

Coast and geodetic survey, P. A. Welker, hydrographic and geodetic engineer in charge of office, room 3, 205 New Jersey avenue S. E.

Bureau of navigation, Arthur J. Tyrer, deputy commissioner of navigation, room 917, Commerce building.

Steamboat-inspection service, Dickerson N. Hoover Jr., chief clerk, room 1022, Commerce building.

DEPARTMENT OF LABOR

The chief clerk is purchasing agent, the detailed work connected therewith being performed by the chief of the division of publications and supplies. The location of which is 1712-1722 G street N. W.

U. S. FUEL ADMINISTRATION

M. A. Downes is the purchasing officer, and all bids on materials may be sent to him.

GOVERNMENT PRINTING OFFICE

This office has only one purchasing agent or bureau, in charge of Edward S. Moores, government printing office building, North Capitol and G streets N. W.

POST OFFICE DEPARTMENT

This department has only one purchasing agent, J. A. Edgerton, post office department building, Washington.

DEPARTMENT OF THE INTERIOR

E. J. Ayers, chief clerk, Washington.

General Land Office

Frank M. Johnson, supervisor of surveys, Denver, Colo.; John D. Yelverton, chief of field service, Washington.

Reclamation Service

Emmett Carr, Washington; A. McD. Brooks, purchasing agent, reclamation service, Denver.

Alaskan Engineering Commission

C. E. Dole, general purchasing agent, 422 Bell street Terminal, Seattle.

UNITED STATES SHIPPING BOARD

F. A. Browne, general purchasing officer, 140 North Broad street, Philadelphia, where also are located A. L. Bell, assistant general purchasing officer; H. L. Lewis, assistant purchasing officer; G. R. Jasper, assistant purchasing officer; T. D. Adams, assistant purchasing officer; E. F. Tomlinson, assistant purchasing officer, J. K. Fawcett, assistant purchasing officer; F. K. Paxton, assistant purchasing officer; W. R. McCann, assistant purchasing officer, and R. J. Lyons, assistant purchasing officer; J. A. Manion, district purchasing officer, Securities building, Seattle; T. G. Plant, district purchasing officer, 343 Sansome street, San Francisco; W. J. Haynen, district purchasing officer, 430 Audubon building, New Orleans; R. E. Heizer, district purchasing officer, Heard building, Jacksonville, Fla.; E. L. Marshall, district purchasing officer, customhouse, Boston; F. C. Selby, district purchasing officer, 615 Lexington building, Baltimore; S. E. Lewis, district purchasing officer, Perry-Payne building, Cleveland; C. P. Morrell, district purchasing officer, 115 Broadway, New York.

British Pig Iron Famine Relieved

Forge and Foundry Irons, However, Continue Scarce, Many Furnaces Making Only Basic—Production of Finished Material Decidedly Below Average—War Demands Ease Up—Shortage of Labor and Fuel is Serious

Bureau of The Iron Trade Review,
Prince's Chambers, Corporation St.,
Birmingham, Eng., June 20.

THE improvement in the pig iron situation in the north of England continues and makers have no doubt that with present transport facilities they will be able to cope with all the work undertaken. It has been found possible to improve the control system and class A allotments are now fully met while B and C consumers are faring much better than they have for many months. Some improvement has also taken place in shipments to the allies, while supplies of forge iron are fairly adequate.

Further south the position becomes much more difficult. Throughout the midlands there is a great scarcity of foundry iron. So many furnaces are now making basic that the proportion of forge and foundry irons has been greatly reduced. Unsatisfactory raw material also yields a larger proportion of inferior product, unsuitable for castings. At the Manchester market this week North Staffordshire foundry iron, quoted at £5 2s 6d ($24.60) was very much wanted but almost impossible to obtain. The scarcity of raw material naturally causes a run on scrap which has had to be substituted largely for foundry castings. All the heavy steel scrap available finds a ready sale and for good cast iron scrap as much as £6 10s ($31.20) has been paid. Rather more broken metal in the way of cast iron scrap has been coming into the market. Fortunately, the railways are doing a little better in supplying trucks so that the stocking of pig iron for lack of transport facilities has for the time being ended. Makers of east coast hematite are meeting the needs of home consumers and have a little more metal to spare for the allies. In this direction some arrears have been worked off, and as tonnage becomes available much more will be done in the same direction. There is no shortage in the ore supply but the blast furnaces like other establishments producing war material are hampered by the scarcity of coal. Easier prices have been reached lately in the Swedish market, the sensational prices of some months ago having now disappeared. No material can be imported from either Sweden or Norway except under license and very few permits are being granted.

Production in finished iron is just now decidedly below the average. The last comb-out of miners is having a very marked effect on fuel production. Several Staffordshire works this week did not commence until Wednesday morning for want of coal, and this scarcity is affecting production in tube and other metal works. Everyone is looking forward to a system of severe coal rationing during the coming autumn and winter.

Next to the coal question the loss of skilled workmen causes anxiety. Apparently, the continual grind in the furnaces and mills is telling upon the men, who are looking round for easier jobs in munition factories and elsewhere. The pay of semiskilled workers in a machine shop is sufficiently attractive even to a puddler or a millman looking for a lighter occupation. One skilled workman who obtained a job with a municipal corporation at a great seaside resort now earns £1 ($4.80) per week, with a war bonus of 25s ($6) and his duties consist mainly in going round with a spiked stick gathering up litter, paper scraps and other refuse. In this case the man made considerable monetary sacrifice, but he was in search of a light summer job, and was no doubt well pleased with his bargain. For his former employer the question was different, and the aggregate effect of the desertions by skilled men is becoming so serious that a number of ironmasters met to consider the matter. They hope to induce the ministry of munitions to impose some kind of prohibition which will prevent the men throwing up their jobs in this light and easy fashion. It is not a question of money, but rather of weariness on the part of the men. In view of the high wages now paid ironmasters are not hopeful of their ability to offer special inducements to retain their men and do not expect coercive measures. The latter were tried up to about a year ago and the restrictions against workmen transferring their employment had a great deal to do with the industrial unrest which a year ago formed the subject of a government inquiry.

All kinds of finished iron are called for in large quantities. The considerable requirements of corrugated sheets for huts for American soldiers in France have brought a lot of business to the mills. The tinned sheet department is also busy on aircraft material and sheets for milk churns and various other food receptacles for army and navy needs.

Although local output is deficient it is clear that war demands are not quite what they were, and this relaxation of pressure has enabled larger sales of nonwar iron and steel to merchants and commercial consumers. Some buyers have even gone so far as to cancel old orders, in some cases placed as far back as January, 1917. Other orders given out on condition of quick delivery and at top prices also have been cancelled. There is no question that material is much more readily available than it was. It is possible to buy plates and certain sections which constructive engineers have been asking for in vain for many months. Undoubtedly, if the relaxation becomes general there are plenty of customers who would promptly come forward to take all the material they can get as the change is welcome in view of the situation with respect to tramways and building repairs, railway rolling stock and similar lines.

Apparently, there has been a slip in a recent price fixture by the ministry of munitions. A short time ago it was announced that rerolled steel would be charged at £15 ($72). It has since transpired that the extra chargeable on lots below 10 tons is £2 17s 6d ($13.80). The figure has caused considerable astonishment to the trade which has always regarded an addition of something like 10s ($2.40) as compensation for the smallness of the tonnage as quite ample to meet the situation. No doubt the reroller would be glad to sell all his steel on these terms in lots of less than 10 tons. It is quite likely the consumers will make a representation on the subject to the industry.

From Sheffield similar news comes as to the easing of demand. The constant increase in the number of open-hearth plants has brought the output fairly up with demand and orders are filled promptly.

May Steel Exports Show Good Gain

Outborne Tonnage Best of any Month of Year, Excepting January—Pig Iron Total Largest for 1918—Rail Deliveries Increase—Eleven Months Export Aggregate Shows Big Loss—Imports Continue at Low Rate

SHIPMENTS of iron and steel products from this country during May reached the largest total for any month this year with the exception of January. Advance figures of the bureau of foreign and domestic commerce indicate that exports of these commodities in May amounted to 488,515 tons. This is an increase of 25,628 tons over the previous month, when the total was 462,887 tons, but is 93,788 tons below the May, 1917, figure of 582,303 tons. For the eleven months ending with May, the 1918 shipments amounted to 5,300,553 tons, compared with 6,244,772 tons in the corresponding period of 1917, a loss of 944,219 tons, or approximately 15 per cent.

IMPORTS AND EXPORTS, GROSS TONS

1915	Imports	Exports
July	20,858	380,340
August	27,556	405,949
September	23,345	382,113
October	34,318	349,843
November	37,131	362,764
December	35,408	353,853
1916		
January	15,824	360,102
February	20,279	368,980
March	15,159	438,649
April	20,176	384,452
May	32,114	538,657
June	26,885	515,214
July	14,774	502,330
August	23,255	571,401
September	25,559	643,762
October	30,169	588,892
November	42,545	554,219
December	44,134	580,988
1917		
January	40,910	608,281
February	24,947	449,099
March	37,943	606,559
April	48,213	519,397
May	26,479	582,303
June	28,419	614,600
July	28,859	357,776
August	22,635	519,518
September	20,196	482,311
October	14,225	557,138
November	13,995	473,549
December	13,769	654,867
1918		
January	12,875	495,057
February	12,941	438,848
March	14,345	379,924
April	11,371	462,887
May	14,387	488,515

IRON AND STEEL IMPORTS

	May,		Eleven months ending May,	
	1918	1917	1918	1917
Pig iron	4,238	4,332	49,411	111,767
Scrap	3,546	16,372	63,013	208,236
Bar iron	39	33	2,360	4,241
Ingots, blooms and billets	3,592	3,616	43,326	23,046
Structural shapes	248	133	7,126	926
Rails	.....	1,491	7,985	13,097
Sheets & plates	84	44	2,045	1,526
Tin & terne plte	.....	2	32	610
Tin scrap	629	465	7,516	6,798
Wire rods	2,011	1	5,475	2,064
Total	14,387	26,479	188,289	372,311

Steel rail exports with a total of 52,211 tons registered a substantial gain, exceeding by 12,748 tons the April, 1918, figure of 39,463 tons, and were 9986 tons greater than the movement in May a year ago. Exports of railroad spikes also increased from 471 tons in April, 1917, and 2204 tons in May, 1917, to 2478 tons for last May. The pig iron tonnage was the largest for any month this year. The May total of 22,567 tons is about double April exports of 11,282 tons. It is, however, only a little more than one-third the shipments for May a year ago, of 61,112 tons. Other products showing marked increases in May, compared with April, are sheets and plates, tin and terne plate, barbed wire and pipes and fittings.

IRON AND STEEL EXPORTS, GROSS TONS

	May,		Eleven months ending May,	
	1918	1917	1918	1917
Scrap	266	12,202	22,067	228,929
Pig iron	22,567	61,112	353,945	751,524
Steel billets, ing. & bl'ms	159,299	168,158	1,837,919	1,744,119
Wire rods	10,312	15,667	178,343	130,129
Steel rails	52,211	42,425	405,278	553,152
Steel bars	48,970	62,523	579,139	697,709
Iron bars	3,219	7,886	45,025	58,730
Struc. iron and steel	13,717	34,764	223,076	319,974
Hoops, bands and scroll	3,902	6,405	55,003	42,213
Sh'ts & plates	75,961	84,168	716,352	595,524
Tin & terne plate	37,350	23,283	220,808	207,509
Barbed wire	19,579	8,543	163,021	285,865
All oth. wire	10,783	19,652	157,166	220,224
Cut nails	478	368	4,682	4,246
Wire nails	6,278	10,133	103,461	114,855
All oth. nails incl. tacks	857	1,744	12,116	16,965
Pipes & fit'gs	17,608	18,867	167,128	221,745
R. R. spikes	1,976	1,333	14,501	16,833
Bolts, nuts, rivets and washers	2,478	2,204	28,090	26,732
Horseshoes	573	320	8,841	4,024
Cast radiators	131	546	2,592	3,771
Total	488,515	582,303	5,300,553	6,244,772

The shipments of steel ingots, billets and blooms for May amounting to 159,299 tons, show a loss of 17,829 tons compared with the April total of 177,128 tons, and are 8859 tons less than the May 1917 tonnage. Steel bars and wire rods also registered losses.

As has been noted for the past several months, imports of iron and steel products into the United States during May still continued at an exceedingly low rate. The May receipts of 14,387 exceeded by 3016 tons the total of 11,371 tons for April, but were only a little more than half the May, 1917, imports of 26,479 tons. A comparison of the tonnages reported for the various products in May and April show little change, with the exception of pig iron and semifinished material, both of which registered gains. Pig iron shipments into this country during May were 4238 tons, a gain of 1113 tons compared with the total of 3125 tons for the previous month, while semifinished material imports increased from 2772 tons in April to 3592 tons in May. For the eleven months ending May 1918, total imports of iron and steel products amounted to 188,289 tons, compared with 372,311 tons for the corresponding period in 1917.

EXPORTS, GROSS TONS

1916	Pig iron	Semi-finished material
Jan.	19,319	55,315
Feb.	15,061	87,406
Mar.	19,439	107,674
Apr.	18,518	88,764
May	28,293	142,782
June	48,770	116,316
July	28,718	135,827
Aug.	60,264	160,921
Sep.	64,122	163,104
Oct.	92,756	162,669
Nov.	106,781	120,883
Dec.	105,195	162,901
1917		
Jan.	69,146	183,656
Feb.	49,018	131,566
Mar.	69,629	193,469
Apr.	44,783	162,209
May	61,112	168,158
June	81,999	192,133
July	32,368	112,085
Aug.	62,083	189,083
Sep.	44,287	148,932
Oct.	47,200	204,724
Nov.	25,733	150,120
Dec.	66,573	204,555
1918		
Jan.	20,581	195,385
Feb.	10,540	173,272
Mar.	9,849	144,443
Apr.	11,282	177,128
May	22,567	159,299

The valuation of iron and steel exports for May, 1918 was $100,594,314, only slightly below that for May a year ago amounting to $106,875,790. For the eleven months ending May, 1918, these exports were valued at $1,042,391,331, compared with $1,013,629,228 for a similar period in 1917. The value of imports of these products for May, 1918, was $2,129,912, and for May, 1917, $1,933,540.

Iron ore imports for the month of May were 74,446 tons, a decrease of only 668 tons compared with the preceding month, and 7684 tons above the total for May, 1917. As in April, the bulk of this tonnage, 65,053 tons, came from Cuba, and the remainder from Canada. There were no receipts of iron ore from other countries.

IRON ORE IMPORTS, GROSS TONS

	May,		Ten months ending May,	
	1918	1917	1918	1917
Spain	.....	16,434	26,093	216,016
Sweden	.....	2,237	17,718	130,595
Canada	9,393	11,740	169,596	100,739
Cuba	65,053	36,350	563,160	587,895
Oth. countries	.....	1	1,634	60,995
Total	74,446	66,762	778,201	1,096,240

Allow Mills More Freedom to Ship

Joint Declaration by Steel Director and Priorities Commissioner Explains Full Plan of Government Distribution—Clears Up Confusion Over Priorities—Jobbers' Position Defined—Blanket Authority Given to Ship Small Surplus Lots

WASHINGTON, July 9.—What the agreement between the American Iron and Steel institute and the war industries board means and requires again has been made the subject of official government announcement, this time a little more clearly than before, in a statement of explanations and instructions compiled jointly by E. B. Parker, priorities commissioner, and J. J. Replogle, director of steel supply. This statement, announced by the board July 4, sums up many of the points touched upon by Judge Parker in his two previous letters on the subject and brings out some new features which are designed for the convenience and guidance of manufactures and dealers in meeting the responsibilities enjoined in the resolutions.

Light on Beclouded Matters

In addition to clearing the atmosphere for jobbers and the manufacturers serving them and to defining the purposes for which steel may be exported, the satement redesignates the classifications embodied in the resolutions and widens the margin in which mill operators are allowed to make shipments not covered by priority, preference or permit. This latter provision limits such shipments to five tons and requires careful check as to the purpose for which they are intended. Otherwise, the statement only repeats points previously made clear; however, it combines them all in one document, even the resolutions, which, as an exhibit, are made part of the entire announcement.

All steel covered by priority certificates is designated as that having rating under Class AA, Class A and Class B. Certificates are issued only for these classes. Some of the steel intended for consumers within the classification of purposes, or preference list, defined in the resolutions, may be covered by priority. The orders for steel not under priority and yet embodied within the general purposes list, are, by the terms of the agreed statement, placed in a new class to be known as Class C. Steel in this classification does not take priority unless delivery cannot be guaranteed. Then, if certificate is issued, it ceases to be Class C steel and becomes priority.

All other steel not provided for in Classes AA, A, B and C, now is placed in Class D, a classification corresponding to that formerly controlled by permit, but, under provision allowing shipments rather freely up to five tons, not all requiring written approval by the steel director. Class D steel does not take priority and automatically tralis all orders being filled in Class C. Permit is not priority, but rather government sanction of steel for so-called non-essential industries. Should, through some possibility, any orders in Class D be given priority, then the steel is no longer in Class D but goes into Class AA, Class A or Class B, as the case may be.

Health Commandments For Business Men

BY DR. THOMAS DARLINGTON

Keep your mouth closed when breathing, also when angry.

Drink cold water with your meals, also between them.

Bathe daily, a shower, if possible.

Eat slowly; this leads to eating sparingly.

Never read or transact business while eating.

Exercise daily and breathe deeply while so doing, but avoid overexertion and never eat when fatigued.

Work 10 hours, sleep eight, and the balance for recreation and meals. Always rest on Sunday.

Always keep a contented mind. Equanimity means longevity.

Neglect no portion of the body. Employ a physician to examine you medically at regular intervals and so watch for the beginnings of disease and build up resistance.

Moderation in all things. Even virtue in excess may become vice.

From address delivered before American and Steel institute at New York.

May Ship Without Permit

As before stated, it is in Class D that the priorities commissioner and the steel director have agreed "in order to avoid delays in filling small orders urgently required for civilian uses" that an order aggregating not more than five tons may be shipped by a mill providing the latter accounts for it in a special report to Mr. Replogle by the tenth of the month covering all such deliveries in the previous month. This leeway will permit many consumers requiring small tonnages to go on with the manufacture of their finished products. For example, if a consumer needs three tons of a certain steel product to complete work undergoing manufacture or construction then, because of the money involved in the undertaking, if for no other reason, the steel manufacturer likely will feel free to allow the buyer that tonnage, provided its rolling will not interfere with essential war orders. The statement in covering this situation does not provide for a case where a consumer may place three or four 5-ton lots, each with a different mill, in order to avoid applying to Director Replogle for a permit.

Government Requires Pledge

The government again invokes use of the pledge in handling the situation presented by the jobbers. These dealers are to file with the priorities committee a pledge they will use their best efforts to see the shipments go directly into some essential production and that they will require their customers to make the same pledge. This pledge by the jobber is to be referred to in every order he places with a mill and the mill is instructed, in the joint statement, to refuse shipment unless it has this assurance. As a further check on jobbers, they are to certify monthly the shipments they have made and the replenishment orders they have placed. Replacement orders will be allowed only on such materials as were shipped for essential purposes and their aggregate tonnage cannot exceed the weight of the essential shipments.

A significant point in the statement is that no matter against what priority rating certain shipments were made, as for example, Class A-5, the materials ordered for replacement may be manufactured by the steel mill only against a rating of Class B-4 and take its chances on delivery under that classification. Thus while jobbers may ship highly essential material, they must be content with a

less essential replenishment rating.

The meaning embodied in the paragraph of the statement referring to exports is interpreted as the war industries board's notice to the industry that steel for export can be manufactured only on written permission of the steel director or of the priorities committee. The war trade board, which controls exports, does not necessarily have to license steel for export as manufactured by direction of the industries board. It has been said that the trade board is piqued at this statement of the industries board. Regardless of the trade board's feelings, however, it is certain the war industries board intends to control its manufacture.

Another point the statement calls attention to is allocation. After repeating the information that Director Replogle allocates only government and allied tonnages, it says if consumers desiring production of Class C steel cannot place the order, application should be made to the steel director.

Instructions Clarifying Priority System

THE complete instructions issued to producers and consumers of iron and steel by Edwin B. Parker, priorities commissioner, and J. Leonard Replogle, director of steel supply, with the approval of Chairman B. M. Baruch of the war industries board, are as follows:

To all producers and consumers of iron and all manufacturers and consumers of iron and steel products:

In order that misunderstandings which have apparently arisen in some quarters as to the practices to be observed in the distribution of pig iron and of iron and steel manufactured products may be removed, we invite careful consideration to the following:

1. All pig iron and steel manufactured products are now being shipped and delivered by the producer or manufacturer in accordance with the resolution of the war industries board adopted June 6, 1918, copy of which resolution, marked for identification "Exhibit A", is hereunto attached and made a part hereof.

2. **PRIORITY ORDERS.** It will be noted that under the resolution of June 6, 1918, all orders covered by priority certificates shall be first provided for or filled and thereafter orders embraced within the Schedule of Purposes entitled to preferential treatment as determined by the priorities board may be filled without other specific priority instruction and without the further approval of any governmental agency.

The purpose was to permit deliveries of pig iron and of steel manufactured products under the schedule of purposes not only after orders covered by priority certificates shall have been filled but at any time to the extent that such deliveries will not interfere with the filling when and as required of orders covered by priority certificates.

The priorities committee is now issuing certificates of three classes, namely, class AA, class A and class B. One effect of this resolution is to put all orders not covered by priority certificates but embraced within the Schedule of Purposes entitled to preference treatment, in a fourth class which we will designate class C, and to give such orders priority and precedence over all other orders not covered either by priority certificates or embraced within the said Schedule of Purposes, which other orders will be designated class D.

If reasonably satisfactory delivery can be secured on class C orders, no application for a higher priority rating need or should be made to the priorities committee.

3. **CLASS D ORDERS—PERMIT TO SHIP.** Orders falling within class D may be filled from surplus stocks, if any remain, after orders covered by priority certificates or falling in class C have been provided for or filled, subject, however, to the approval in writing of the director of steel supply first had and obtained.

In order to avoid delays in the filling of small orders urgently required for essential civilian uses, the director of steel supply does hereby approve in writing the filling of such orders falling in class D on the conditions following:

(a) That the order in the aggregate shall not exceed in quantity 5 tons;

(b) That the manufacturer shall on or before the tenth of each month report to the director of steel supply all orders filled during the preceding month under this authority; and shall certify that he believes that it was in the public interest that such orders should be filled.

Applications for permit to manufacture or ship class D orders which cannot be shipped under the foregoing authority must be filled out and mailed in duplicate to the director of steel supply on blanks which will be forwarded each manufacturer; such applications must be made by the manufacturer only and not by the purchaser. Upon receipt of such application it will have prompt and careful consideration at the hands of the director of steel supply who will endorse on the bottom of the application in a space provided therefor the word "Granted" or the word "Declined" and return one copy to the applicant. If granted the manufacturer may ship on such terms and under such conditions as may be imposed by the director of steel supply.

4. **ALLOCATIONS.** The direct war requirements of iron and of iron and steel products of all departments and agencies of the United States government and of its allies will be allocated to the various manufacturers by the director of steel supply.

All other orders for direct and indirect war requirements for iron and iron and steel products should be placed by the consumer with his regular source of supply. In the event a consumer is unable to find a producer or manufacturer who will accept this order, application for allotment should be made to the director of steel supply only when supported by strong evidence in writing that the public interest requires that such order shall be placed and filled.

5. **JOBBERS' STOCKS.** It is in the public interest that jobbers dealing in plates, sheets, bars and shapes, structural shapes, tubular products, wire and wire products, tin plate, heavy hardware, farm implements, mining tools, machinery and equipment, oil well supplies and similar products, should be permitted to maintain reasonable stocks from which government agencies, war industries and the civilian population may draw to meet essential requirements. The jobbers recognize the necessity for rigidly restricting all iron, steel and tin products to essential uses and have pledged their wholehearted co-operation to a program to prevent hoarding on the part either of the jobbers or of their customers, and to reduce to an absolute minimum both jobbing and retail stocks. On the faith of this pledge on the part of the jobbers a plan has been adopted as follows:

(a) Each jobber shall not later than the 5th of each month file with the director of steel supply, on forms to be furnished by him, a certified statement covering shipments made by the jobber during the preceding month.

(b) To the extent that such shipments fall within priority class AA, class A, class B or class C, as hereinbefore defined, or by permits issued by the director of steel supply, the jobber shall be entitled to place with the manufacturer or manufacturers constituting his regular source or sources of supply, orders for the replacement of shipments so made; provided the total tonnage or quantity of each commodity ordered for replacement shall not be in excess of the amount of such commodity shipped by him during the previous month and embraced within the priority classes mentioned.

(c) The manufacturer will upon receipt of such order scrutinize it carefully in the light of the other demands made upon him and in the light of the then relation of the demands to the supply generally and the particular requirements and demands, for the products ordered in the territory served by the jobber placing the order, to guard against hoarding or an inequitable distribution of the supply available to meet all demands for essential uses. The government is depending upon the experience and patriotism of the manufacturers to assist it in securing an equitable distribution of all products

and their restriction to essential uses.

(d) All orders for stocks placed with the foregoing rules shall be and are hereby rated as class B-4 and entitled to priority and precedence accordingly; conditioned, however, upon the jobber placing the order having first filed with the priorities committee and also with the director of steel supply a pledge in writing as follows:

"I do hereby pledge myself not to use or so far as lies within my power, permit the use of any stocks now in or which may hereafter come into my possession or control, save one (1) for essential uses as that term may be defined from time to time by the priorities division of the war industries board, or (2) under permits in writing signed by the director of steel supply; that I will make no sale or delivery from such stocks to any customer or retailer before his filing with me a similar pledge in writing; and that I will use my utmost endeavor to prevent the hoarding of stocks and to insure that they be distributed solely for essential uses."

Where such pledge has been once filed in accordance with the above paragraph, the jobbers should so certify to the manufacturer when placing his order and the order shall not be accepted by the manufacturer in the absence of such certification.

6. **EXPORTS.** No application for a license to export iron or iron and steel products (save on direct orders of the United States and its allies) should be made of the war trade board unless the orders fall within the priority class AA, class A, class B or class C as hereinbefore defined, or are covered by a permit by the director of steel supply.

All communications with respect to priority matters dealt with herein should be addressed to the priorities committee. All communications with respect to all other matters dealt with herein should be addressed to the director of steel supply.

Edwin B. Parker,
Priorities Commissioner.
J. Leonard Replogle,
Director of Steel Supply.

Approved:
B. M. Baruch,
Chairman War Industries Board.
Washington, D. C., July 3, 1918.

Committee Speeding Up War Activities

WASHINGTON, July 9.—One of the greatest strokes of the war department in speeding up war output has been the appointment of the special committee of manufacturing specialists, which has been given free rein to study production problems and to slash red tape right and left in order to increase efficiency, effect economies and to produce well-made and servicable implements of war. These men are to eliminate such unessential labors as polishing, buffing, etc., which are appropriate for full-dress parade effects, but only add to the cost in time, labor and money of producing materials to win the war.

This committee includes W. W. Coleman, president, the Bucyrus Co., Milwaukee, and A. L. Humphrey, president, the Westinghouse Air Brake Co., guns and gun carriages; C. E. Davis, New York engineer, fire control and optical instruments; J. R. Harbeck, vice president, the American Can Co., loading plants; J. M. Young, plant manager, the American Can Co., and Herbert Wolff, vice president, the American Car & Foundry Co., shell machining for mobile artillery; H. H. Blood, the Pratt & Whitney Co., Hartford, Conn., fuses, boosters and adapters; and George C. Brainerd, the Hydraulic Pressed Steel Co., Cleveland, shell forgings. The men are to visit all plants engaged in their specialities with the exception of the Bethlehem Steel Co., and all government arsenals, proving grounds and other military manufacturing plants.

An example of the economies to be thus effected may be had from the statement of Maj. Gen. C. G. Williams, acting chief of ordnance, in which he shows a saving of more than $8,750,000 in two months in the small arms sections of the procurement division alone. This was brought about by slight change in manufacturing processes and in utilizing or selling discarded and rejected materials. Saving of money is not sought in this work, but it automatically results when labor and time-saving effects are attained.

Capital Odds and Ends

Washington, July 9.—Importation of manganese ore from Asia and Australasia after July 20, 1918, is prohibited by a new ruling of the war trade board. All outstanding licenses for ocean shipments have been revoked for on or after that date. It has been found that adequate supplies can be obtained from sources nearby, relieving the strain upon the tonnage resources of the United States during the present difficult period. The board has also amended the restriction upon the importation of magnesite to permit importation under the backhaul proviso, when shipped as return cargo from Europe and the Mediterranean coast of Africa, and when shipped from convenient ports where loading can be done without delay.

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The fuel administration has appointed 25 additional inspectors to operate in the fields out of which coal is shipped to Atlantic ports. Safety and speed of ships traversing the submarine zones depends greatly on clean coal, and the inspectors will be charged with the special duty of providing the highest quality.

* * *

Director General McAdoo announces that he was recently notified by President Woodin of the American Car & Foundry Co. that the first of the 33,000 freight cars for which that company secured the contract April 26, 1918, has been completed. Work on the entire order is progressing rapidly.

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Stanley King, Boston, formerly secretary and director of the W. H. McElwain Co., shoe manufacturers, and a director of the Boston chamber of commerce, has been appointed private secretary to Secretary Baker, succeeding Ralph Hayes, Cleveland, who was drafted.

* * *

The war industries board has also announced the appointment of Edwin F. Gay, dean of the Graduate School of Business Administration, Harvard University, to be chairman of its division of planning and statistics. Mr. Gay is at present director of the division of planning and statistics, shipping board, and a member of the war trade board in charge of their statistical department.

* * *

Thomas E. Donnelly of Chicago has been appointed chief of the pulp and paper section of the war industries board, succeeding William B. Colver, resigned. Mr. Colver is chairman of the federal trade commission and a member of the price fixing committee of the war industries board. He was first made chief of the paper and pulp section of the board because of his familiarity with the paper industry.

* * *

The war department has announced that $160,000,000 has been spent upon its railroads in France, and that soon there will be 50,000 men engaged in railroad construction and operation over there. This amount was spent for 1727 locomotives, 22,630 freight cars, 395,000 tons of rails, and large tonnages of rail fastenings, turnouts, ties, other track materials, locomotive cranes, building materials, shops, roundhouses, etc.

* * *

An engineer officers' training camp will be opened Aug. 1 at Camp Humphreys, Accotink, Va., the engineer corps of the war department has announced, for instruction preliminary to commissioning technical and trained men as captains and lieutenants. In addition to regular military training, intensive instruction in mining, quarrying, gas and flame operations, barbed wire fortifications, water supply, railroad communication, etc., will be given.

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

Believe Copper Price Raise Good Omen

WALL STREET showed comparatively little interest in the reports on profiteering submitted to the senate by the federal trade commission and the treasury department. These lacked convincing features and did not stimulate much action. On the other hand, the advance of 2½ cents a pound granted the copper producers failed to influence the stock market beyond a firming up of copper stocks. However, the action of the war industries board in this case was taken as a favorable omen of the relations between the government and business generally.

This action on copper prices came immediately on the heels of the federal trade commission's sensational charges and indicates that production of materials essential to the conduct of the war is the first consideration. The federal trade commission's report showed that the low-cost copper producers were making as high as 100 per cent on their capital, for the simple reason that they can produce cheaply. Yet the price must be high to effect maximum production by the high cost producers. The high profits of the low cost producer are given him by the government's own policy. That this policy is wise and farseeing in this case is evidenced by the large supply of essential materials which is regularly becoming available for the country's war preparations.

Large Taxes are Expected

To equalize the earnings of the high-cost producers, not only of copper, but of iron and steel and other materials, the government will impose taxes on a graduated scale, which will leave the low cost producer with only a specified percentage of profit, whether his busines earns 100 per cent or 1000 per cent. The financial community is expectant of large taxes. In fact, the treasury department and the house ways and means committee have already proposed raising $8,000,000,000 by war taxes this year as against something over $3,000,000,000 last year. What effect these taxes will have on busines remains to be seen, but bankers and business men are not giving much attention to the teapot tempests stirred up by some statisticians whose mulling over large figures has marred their perspective.

The iron and steel industry will observe with the most active interest future developments in the Russian situation, in view of the fact that the new allied policy, formulated in Paris and accepted by President Wilson, contemplates economic as well as military steps. If the allies are successful in re-establishing commerce between Russia and the civilized world outside of Germany, it will mean that America will be called upon to supply enormous quantities of machinery and implements and tools of every description. These are the things that the unhappy and starving Russian needs more than any other, and they are the very things that Germany, owing to her shortage of metals, can not supply, indeed which no other country can spare save possibly our own. The task of recreating trade relations with chaotic Russia presents many complex and gigantic difficulties, but one which should not prove insurmountable, whether by reverting to the primitive system of barter and exchange of goods or whether by stabilizing Russian exchange.

Cramp Profits Are Raised by Naval Contracts

The William Cramp & Sons Ship & Engine Building Co. reports net earnings for the year ending April 30, 1918, amounting to $2,981,845 after taxes, against $1,759,496 the preceding 12 months. President J. H Mull, in his remarks to stockholders, said:

"By virtue of its long experience your company has been called upon to render a special service in devoting most of its facilities to the rapid construction of vessels for the navy department.

"We now have under contract in various stages of completion, torpedo boat destroyers and scout cruisers for the navy department; 10,000-ton bulk oil tankers and cargo vessels for the United States Shipping Board and Emergency Fleet corporation; making 57 vessels in all. During the year the company launched 15 vessels of various types, thereby establishing a high record.

"Approximately 95 per cent of our foundry and machine shop facilities, including departments which heretofore have been engaged in other lines, is devoted to naval work, and our foundries have been called upon to serve many of the other shipyards."

The directors declared a dividend of 3 per cent, payable Aug. 1. Officers and directors were re-elected.

The income account for the year compares as follows:

	1918	1917	1916
Net aft. taxes	$2,981,845	$1,759,496	$1,497,255
Depreciation .	294,826	213,063	197,879
Charges	288,606	257,507	211,672
Surplus	2,398,412	1,288,926	1,087,704

To Sell Alien Plant

A. Mitchell Palmer, alien property custodian, on Aug 1, will sell the car manufacturing plant of the Orenstein-Arthur-Koppel Co., Koppel, Pa., under authority granted to his office by an amendment to the trading with the enemy act. Under the laws and terms of sale, as announced, the property must be bought by an American citizen and any person buying for a person not a citizen of the United States is subject to heavy penalty. The Orenstein-Arthur-Koppel Co. is a corporation of Prussia.

Hardware and Iron-Steel Concerns Combine

Announcement is made by George Boole, head of the Western Hardware & Metal Co., First avenue south and Connecticut street, Seattle, that the business of that firm has been merged with that conducted in the northwest by A. M. Castle & Co., Chicago. The new firm's name is A. M. Castle & Co., of Washington, and it is capitalized at $1,500,000. The entire organization and warehouse facilities of the Western Hardware Co. have been taken over by the new concern. George Boole, Seattle, has been made chairman of the board of directors; W. B. Simpson, Chicago, president; L. M. Henoch, Chicago, secretary, and H. Erskine Campbell,

Seattle, treasurer. The firm of A. M. Castle & Co. was founded in 1890 with headquarters at Chicago and has grown to be a large iron and steel jobbing concern with modern plant and other facilities. The Western Hardware & Metal Co. has been in business for 12 years at Seattle and its organizer George Boole has had much experience in iron and steel merchandising. The newly organized concern will specialize on plates, black and galvanized steel, structural shapes, iron and steel bars, rivets, bolts, pipe, hoops and bands and will carry such specialties as chain, shovels, wheelbarrows, blowers, gauges, valves and waste.

Titanium Bronze Sold

The Titanium Alloy Mfg. Co., Niagara Falls, N. Y., has sold its entire interest in its subsidiary, the Titanium Bronze Co., to a group of Buffalo investors headed by C. A. Finnegan. The direct management of the Titanium Bronze Co. will remain in the hands of W. M. Corse, president of the American Institute of Metals, as in the past. The plant of the Bronze company also will remain in its present location for a year and possibly beyond that time. These quarters are leased from the Titanium Alloy Mfg. Co.

The business of the Titanium Bronze Co. has grown very rapidly in the past two or three years and it was the opinion of the controlling interests that its future would best be assured by arranging for independent ownership. The Titanium Alloy Mfg. Co. will continue to devote its energies to developing the use of titanium in various fields.

Leases Iron Works

The plant of the Washington Ornamental Iron Works, Spokane, Wash., has been leased by A. Treppe and Arthur Busch, who will continue a similar line of business under the name of the Washington Architectural Iron & Wire Works. The foundry section has been taken over by Graham Boyd, who has been associated with his father in the National Iron Works for a number of years. The lines to be placed on the market by the new company will include elevator enclosures, elevator cars, fire escapes, iron stairs and railings, bank and office railings, wire and iron window guards, wire and iron fences, brass and bronze railings and brass and bronze name plates.

Buys Truck Rights

The Crescent Truck Co., 347-349 First avenue, Elizabeth, N. J., has purchased all the rights, title and interest in the Crescent electric industrial truck from the Bethlehem Shipbuilding Corp., of South Bethlehem, Pa. The new company will manufacture a full line of trucks and tractors, utilizing the Crescent patents. These trucks were developed by Samuel L. Moore & Sons Corp., Elizabeth, N. J.

Financial Crop Ends

The Lyons Atlas Co., Indianapolis, and the Hill Pump Co., Anderson, Ind., both engine manufacturing concerns, have been merged under the name of the Midwest Engine Co., with a capital of $3,500,000. The new company has orders for $6,000,000 worth of turbine engines and for $1,000,000 worth of Diesel engines.

* * *

Another bond bill, authorizing $8,000,000,000 of Liberty bonds, in addition to all heretofore authorized, has been framed by the house ways and means committee, in preparation for the next issue, expected in October, and to provide for a subsequent issue when necessary. Authorization is outstanding for $4,000,000,000 in bonds, and the next issue probably will be around $8,000,000,000.

* * *

The Westinghouse Airbrake Co., Pittsburgh, in a letter that accompanies its dividend notice, announces that it is doing the largest business in its history. The unfilled orders exceed $28,000,000. The statement says to carry on this very large business, with the large increase in inventories and accounts and bills receivable, has made it desirable for the company to use temporarily its borrowing power with its bankers. This statement is made to prevent any misapprehension on the part of the stockholders.

* * *

According to reports current in the New York financial district, the Bethlehem Steel Corp. is in the market for additional funds. A group of bankers, headed by the Guaranty Trust Co. and the Bankers Trust Co., have under consideration a plan for raising approximately $50,000,000 by the sale of short term notes. It is said the corporation wants the funds for completing construction of one of its plants and for meeting maturity next February of $50,000,000 of a 2-year notes.

* * *

Concerns who have recently increased their capital stock include the following: The Couch Bros. Mfg. Co., Atlanta, Ga., from $42,000 to $200,000; the International Agricultural Corp., New York, from $24,000,000 to $35,000,000; the Waterbury Fastener Co., Waterbury, Conn., from $5000 to $50,000; the National Patent Reed Co., Unionville, Conn., from $2500 to $50,000; the H. & H. Foundry Co., Stamford, Conn., from $20,000 to $100,000; the Organ Power Co., Hartford, Conn., from $15,000 to $100,000; the United States Tool Co., Cleveland, from $100,000 to $200,000.

Wide Effect

Of Government Orders in Solvent Naphtha and Ammonia Sulphate

New York, July 6.—A far-reaching effect on the supply of sulphate of ammonia is expected from large orders for xylol which have been placed by the navy department this week. This product will be required for making the trinitrotoxylol which the navy department placed under contract with high explosives' manufacturers a few weeks ago. Practically the entire output of crude naphtha will be utilized, so that comparatively little solvent naphtha will be produced from now on.

Present indications are that the benzol requirements of the ordnance department for the remainder of the year will aggregate 3,500,000 to 4,000,000 gallons. During June, and so far in July, about 500,000 gallons were placed. The remainder, it is expected, will be closed within the next few weeks. It is not expected, nevertheless, that this development will have much effect on the market, since the output of benzol now is 2,500,000 to 3,000,000 gallons per month. Commercial demand is comparatively small, due to the scarcity of other products required in utilizing benzol.

Considerable difficulty is being encountered by producers in meeting toluol demands. During June about 50,000 gallons or about 50 per cent of output were released for commercial consumers and approximately an equal amount in May. It is expected that about 60,000 gallons will be released for July.

The ordnance department has placed large phenol orders to be delivered 750 pounds per month. Outside of this business, a fair amount of spot business continues at 47 to 50 cents per pound.

Coke Oven By-Products

Spot

Per Gallon at Producers Plant	
Pure benzol	$0.25 to .30
Toluol (on sales sanctioned by government) (tank cars)	1.50
Toluol (on sales sanctioned by government) drums	1.55
Toluol (for government)	1.50
Solvent naphtha	.18 to .22
Per Pound at Producers Plant	
Phenol	$0.47 to .50
Naphthalin (nominal)	.10 to .12
Per 100 Pounds at Seaboard	
Sulphate of ammonia (nom.)	$5.65 to 5.75

Contract

Pure benzol	nominal
Toluol	no market
Solvent naphtha	nominal
Per Pound at Producers Plant	
Phenol	nominal
Per 100 Pounds at Seaboard	
Sulphate of ammonia (for commercial use)	no market
Sulphate of ammonia (for government)	$4.50

Obituaries

HORACE A. STOCKER, president of the Stocker-Rumely-Wachs Co., machine tool dealers, Chicago, died July 3 at his home at Western Springs, a suburb of Chicago, after an illness with Bright's disease since shortly after Jan. 1, aged 54 years. He was born on a farm in Ohio and removed to Chicago in 1888. In 1895 he assisted in founding the McDowell-Stocker Co., dealer in machinery, selling his interest in 1904. The next year he founded the H. A. Stocker Machinery Co., and in 1917 combined this with the Rumely-Wachs Co. He was a director in the Long & Alstetter Co., Hamilton, O., and held stock interest in the Liberty Machine Tool Co., Hamilton, the Massillon Foundry & Machine Co., Massillon, O., and the Rockford Tool Co., Rockford, Ill. He was a Mason, one of the founders of the Machinery Club of Chicago and a member of the Cincinnati Business Men's Club. He was a leader in the machine tool trade, and exerted much influence, being considered one of the strong factors in the Chicago trade.

Henry Trenkamp Sr., Cleveland, president of the Ohio Foundry Co., and vice president of the Trenkamp Stove Co., died at his home in that city recently.

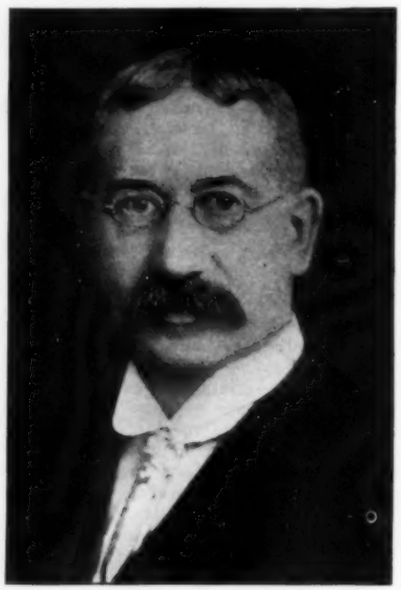
Benjamin Seward Porter, who had been affiliated with the Aetna Nut Co., Southington, Conn., for over 40 years, latterly as secretary and treasurer, died June 24 at his home in that city. He was 71 years old and had been ill a long time.

Seth Crawford Thomas, aged 40, in charge of the invoicing department of the Oliver Iron & Steel Co., Pittsburgh, with which he had been connected for 20 years, died at his home in Wilkinsburg, Pa., Wednesday, June 26.

Charles O. Baird, whose father, Mathew Baird, was one of the founders of the Baldwin Locomotive Works, and who was well known as a financier and manufacturer himself, died recently at Wernersville, Pa. He was president of the Acme Staple Co., Camden, N. J., and had extensive interests in Port Arthur, Tex.

William F. Anderson, aged 54, former head of the George S. Anderson Co., Jeffersonville, Ind., died recently in that city, of heart disease. This company was established by his grandfather, Charles C. Anderson, about 70 years ago and only recently passed out of the Anderson family's control.

John William Bell, superintendent of the Gulf States Steel Co., Birmingham, Ala., died recently. Mr. Bell was 50 years old. He was a native of Scotland and had been superintendent of coal mines in Scotland and England and also had managed mines in Colorado, Virginia and West Virginia before going to the Birmingham district.



HORACE A. STOCKER

Frederick G. Hausman, treasurer and manager of the Star Brass Mfg. Co., Boston, committed suicide because of ill health recently.

Caldwell C. Robinson, aged 21, 2nd lieutenant of the 82nd company, 6th regiment, United States marine corps is reported killed in service in France. He was the son of the late Col. Charles L. F. Robinson, who was president of the Colt's Patent Fire Arms Mfg. Co., Hartford, Conn., at the time of his death about two years ago.

Dr. James Douglas, for many years president and lately chairman of the board of directors of Phelps, Dodge & Co., copper mine owners died at his home in New York City, June 26, aged 81. Dr. Douglas had been ill three years, but two months ago his condition became alarming. Anaemia and other infirmities caused his death. He was rated one of the foremost metal and mining authorities in the world and was also a historian and writer of note and a philanthropist.

Dr. William M. Polk, noted surgeon and gynecologist, dean of the Cornell medical school, died at Atlantic City, N .J., June 24, aged 74. Dr. Polk served in the Confederate army during the civil war, and became superintendent of the Brierfield Iron Works, Brierfield, Ala., which during the war had been one of the most important makers of war munitions for the south. While in charge of operations at the Brierfield Iron Works, he began the study of medicine.

Howard Lincoln Coburn, who as chief engineer and director of the Ambursen Construction Co., Boston and New York, built many large dams and hydro-electric plants in the United States and Canada, died at his home in New York recently. Mr. Coburn was 52 years old, a graduate of Massachusetts Institute of Technology, and a member of the American Society of Civil Engineers, the American Society of Mechanical Engineers, the Engineers' clubs of New York and Boston, and Technology club.

John McCaffrey, aged 76, who organized the firm of Atwood & McCaffrey, died at his home in that city on Friday, June 28, after a brief illness. He was born in Ireland and had been a resident of Pittsburgh since 1850. Before coming to Pittsburgh he spent several years in Canada. He learned his trade as machinist and steam fitter at the Penn avenue plant of A. Fulton & Co., Pittsburgh. The firm of Atwood & McCaffrey, in November, 1899, together with the Shook-Anderson Mfg. Co., the Pittsburgh Valve & Machine Co., the pipe-fitting department of Wilson & Snyder, and the foundry department of Alexander Speer & Sons, was consolidated under the name of the Pittsburgh Valve, Foundry & Construction Co. Mr. McCaffrey served as director and superintendent of construction for the company until two years ago when he retired from business. He was an expert in his vocation and in setting up rolling mills and blast furnaces.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WILLIAM M. BAILEY has joined the organization of the Federal Shipbuilding Co., Kearney, N. J., the shipbuilding subsidiary of the Steel corporation. Mr. Bailey for many years was closely identified with the executive management of large steel companies. For years he served as secretary to President A. C. Dinkey of the Carnegie Steel Co. and later in the same capacity when the latter went with the Midvale Steel & Ordnance Co. When Mr. Bailey left the Midvale Steel & Ordnance Co. he was filling the post of assistant to the president. His connection with the Federal Shipbuilding Co., therefore, represents his return to the Steel corporation. Mr. Bailey is one of the type of younger iron and steel men of the highly capable class who are associating themselves with the rejuvenated shipbuilding industry.

Charles R. Hook, vice president American Rolling Mill Co., Middletown, O., has been appointed a director of the company, succeeding the late J. G. Battelle, of Columbus, O.

Charles E. Birch, formerly associated with the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., joined the sales force of the Champlain Metals Corp., 165 Broadway, New York, July 1.

Walter Goodenough was recently elected a vice president of the American International Shipbuilding Corp. Other vice presidents are L. D. Lovekin and F. W. Wood.

D. F. Crawford, who recently resigned as general manager of the Pennsylvania Lines west of Pittsburgh, has been elected vice president of the Locomotive Stoker Co., Pittsburgh.

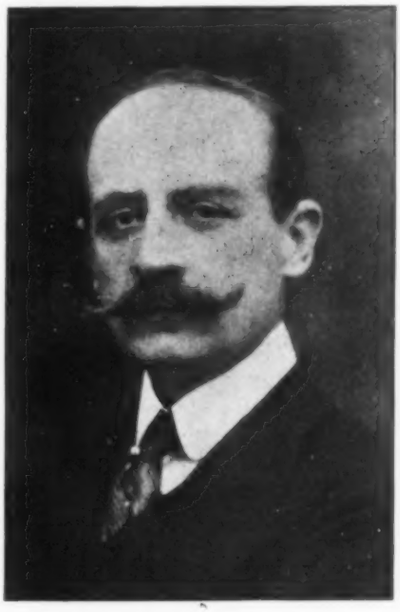
William H. Schuchardt, vice president of the Pelton Steel Co., Milwaukee, has been appointed general manager to succeed T. H. Harvey, who recently resigned.

Louis Rasmussen, formerly affiliated with the Manitowoc Aluminum Foundry Co., and later with the Simms Foundry Co., Racine, Wis., has been appointed foundry superintendent of the Campbell Mfg. & Foundry Co., Muskegon, Mich.

James H. Hughes, for 15 years salesman for the Carnegie Steel Co., in Canton territory, has resigned to accept a position in the sales office of the Timken Roller Bearing Co., Canton, O.

Hugh M. Condie became commercial office manager of the Swedish Iron & Steel Corp., of New York and Brooklyn, upon his recent resignation as traffic manager of the Warren Webster & Co., Camden, N. J.

F. J. Nicholas resigned recently as treasurer and purchasing agent of the Sandusky Foundry & Machine Co., Sandusky, O., to accept an important position with the Calumet & Hecla Mining Co., Calumet, Mich.



CHARLES EUGENE SCHNEIDER

Who was elected president of the Iron and Steel institute, at its annual meeting in London, as noted in last week's IRON TRADE REVIEW

H. Johnson was recently made superintendent of the Lakeside Foundry Co., Detroit, producer of motor car castings. For a long time he was superintendent of the Fairview Foundry Co., controlled by the Chalmers Motor Co., Detroit.

J. W. Livingston has been made foundry superintendent of the Gile Tractor Co., Ludington, Mich. He formerly was connected with the foundry operated by the Studebaker Corp. and later with the Campbell Mfg. & Foundry Co., Muskegon, Mich.

Henry F. Jordon, who formerly was employed by the Colonial Steel Co., in various capacities, and who for six years has been Pittsburgh sales manager of the Braeburn Steel Co., has been made general sales manager to succeed Frank P. Case, resigned.

E. F. Flad who formerly had charge of the Youngstown, O., slag-crushing plant of the Carnegie Steel Co., has been made chief construction engineer and efficiency expert. He succeeds Fred Hubbard who now is employed at the Neville Island ordnance plant.

W. B. George, formerly affiliated with the Greenwald Foundry Co., Cincinnati, has purchased an interest in the Frisbie Engine & Machine Works, 33 East Water street, that city. The latter company is noted in the marine field and new facilities will be installed to take care of Ohio river steamers.

Percy W. Fenner, formerly in charge of steel sales in the Cleveland territory for William Jessop & Sons, Inc., New York, has been made district sales manager in the recently opened office of the Latrobe Electric Steel Co., Latrobe, Pa., in the Union National Bank building, Cleveland.

George H. Crossan, formerly of the purchasing department of the General Electric Co., Lynn, Mass., is now acting in the capacity of director of purchases for the General Vehicle Co., Aeronautical Engine Corp., and the Wright-Martin Aircraft Corp., Long Island City, New York.

Samuel W. Traylor, former president of the Traylor Engineering & Mfg. Co., Allentown, Pa., has been elected chairman of the board. William J. Roberts, former vice president and general manager, succeeds him as president and H. Battersby, formerly treasurer, is now vice president and treasurer.

Robert Snow recently became superintendent of the Great Lakes Foundry Co., Port Huron, Mich., formerly Theisen & Braithwaite Co., upon his recent resignation as foundry superintendent of the Detroit Foundry Co., and Foundry & Machine Products Co., Detroit, with which allied concerns, he has been affiliated for several years.

L. C. Sprague has been made special representative in connection with the sale of pneumatic tools to railroads for the Chicago Pneumatic Tool Co., Chicago. Mr. Sprague was formerly connected with the Tool company,

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

but more recently has been connected with the railroad department of the H. W. Johns-Manville Co., New York.

Henry J. Schlesinger, associated with his father, Ferdinand Schlesinger in the management of his large iron, steel and chemical manufacturing interests, with headquarters at 1100 First National Bank building, Milwaukee, Wis., has been commissioned a captain in the ordnance corps of the United States army. He reported for duty July 1.

M. C. Tuttle, former manager of the production division of the Emergency Fleet corporation, has been placed at the head of the recently inaugurated supply division. This department is designed to supply material to the various shipyards and centralizes the duties of the purchasing, production and transportation divisions.

George H. Bishop, who for 16 years had charge of the cost department, shop system and organization at the Eclipse works of Fairbanks, Morse & Co., at Beloit, Wis., resigned July 1 to become general manager of organization and system work for the Wright-Martin Aircraft Corp., whose main works are at New Brunswick, N. J., and Long Island City, New York.

Charles B. Wilson, president and general manager of the Wilson Foundry & Machine Co., Pontiac, Mich., has entered the government's service. He has been made assistant manager of aircraft production and has charge of airplane production at the plant of the Curtiss Airplane & Motor Corp., Buffalo. He has been granted a leave of absence by his company.

P. A. E. Armstrong, vice president of the Ludlum Steel Co., spoke on "Tool Steel, Government Cost and Production", and Joseph F. Savage, secretary and general manager of sales of the American Tube & Stamping Co., Bridgeport, Conn., on "Strip Steel", before the Purchasing Agents' Association of Connecticut in Waterbury, Conn., June 25.

I. H. Cornell, vice president and sales manager of the St. Joseph Lead Co., 61 Broadway, New York, resigned recently, and is succeeded by L. H. Besson, secretary of the company. Mr. Cornell has assumed his new duties as assistant to Pope Yeatman, head of the nonferrous metals division of the raw materials section, war industries board.

Theodore H. Harvey has resigned as general manager and assistant secretary of the Pelton Steel Co., Milwaukee, to accept the position of general manager of the Ohio Steel Foundry Co., Springfield, O. Mr. Harvey assumed his new duties July 1. William H. Schuchardt, vice president and secretary of the Pelton Steel Co., has taken charge as general manager.

J. Harry Mull has been elected president of the William Cramp & Sons Ship & Engine Building Co., Philadelphia, to succeed Harry W. Hand. Other officers re-elected are: H. Birchard Taylor, vice president; Charles T. Taylor, secretary and treasurer; Roland L. Howe, assistant secretary; Clarence R. Peterson, assistant treasurer, and George D. Martin, comptroller.

H. E. Stocker, production manager of the Fort Wayne works of the General Electric Co., has tendered his resignation and will become general manager of the International Clay Machinery, Dayton, O. He will be succeeded at Fort Wayne by J. H. Evans, present head of the cost and accounting department of the General Electric Co.'s plant in that city.

Edwin F. Gay, dean of the graduate school of business administration, Harvard university, has been appointed chairman of the division of planning and statistics of the war industries board. He has been director of the division of planning and statistics of the United States shipping board, and as a member of the war trade board he was in charge of its statistical department.

Robert F. Atkins, eastern credit manager of the Universal Portland Cement Co., Chicago, in the Pittsburgh office, has resigned. He assumes a similar position with the Emergency Fleet corporation. E. M. Johnson, former assistant credit manager of the cement company at Chicago, succeeds Mr. Atkins at Pittsburgh and A. J. Joyce of the Chicago office, succeeds Mr. Johnson.

D. E. Felt, president of the Felt & Tarrant Mfg. Co., Chicago, has been appointed director for that district of the regional industrial organization created by the war industries board. Lucius Teter, president of the Chicago Association of Commerce and organizer of the district, made the appointment. The district comprises the northern half of Illinois and Indiana and the state of Iowa.

P. B. Findley, technical editor, department of publicity, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., resigned recently to enter the training school at the University of Pittsburgh. He is taking a special course to fit himself for radio work with the signal corps of the United States army. Before becoming affiliated with the Westinghouse company, Mr. Findley was editor of the *Electrical Age*.

A. M. Minnick, who for two years has been sales manager of the electric furnace department of the John A. Crowley Co., Detroit, Mich., manufacturer of the Gronwall-Dixon electric melting and refining furnace, has received a first lieutenant's commission in the ordnance department. Prior to becoming affiliated with the Crowley company, he was sales manager of the Snyder Electric Furnace Co., Chicago.

R. Trecher, who has been general steel plant superintendent of the Keystone Steel & Wire Co., Peoria, Ill., for about a year, has resigned due to poor health. He will take a rest with his family at Wilmette, Ill., and further plans are not announced at this time. Formerly Mr. Trecher was with the Illinois Steel Co., at South Chicago, for 13 years, prior to becoming affiliated with the Keystone Steel & Wire Co.

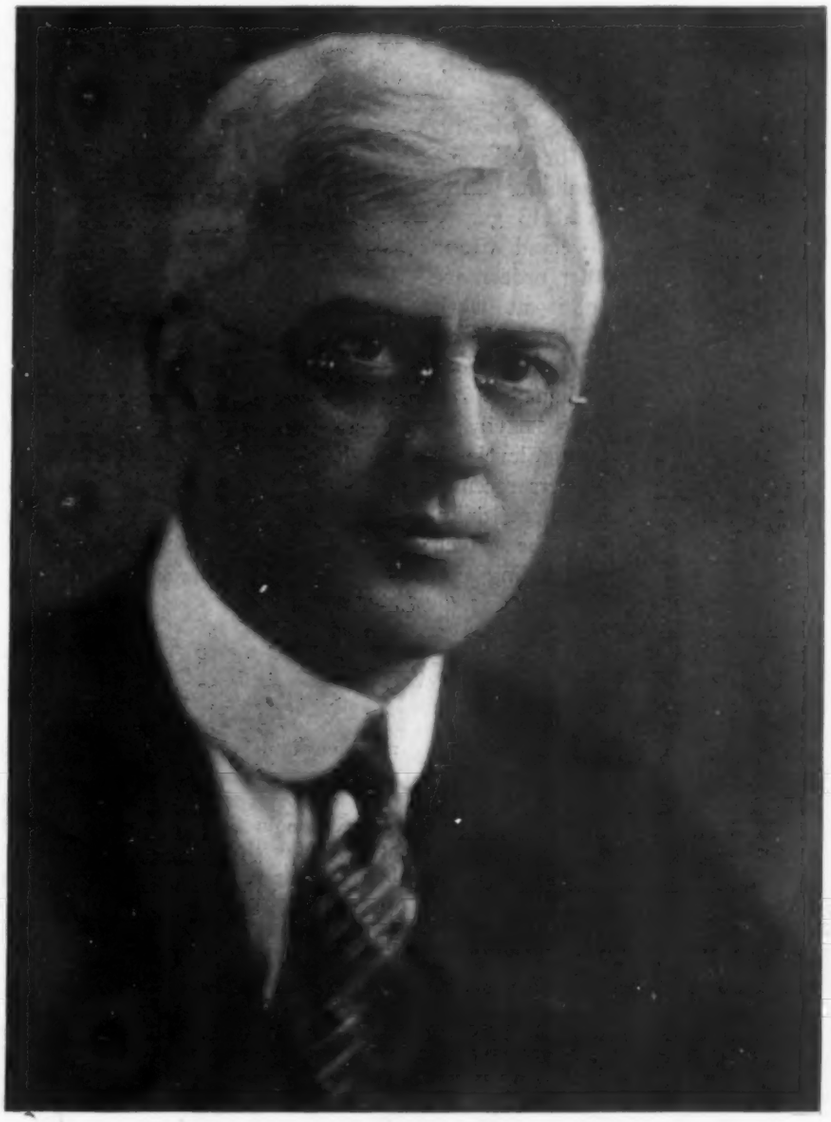
Henderson W. Knott, former general manager of the Morgan Crucible Co., New York, has been appointed by the United States fuel administration to manage the field force of engineers and inspectors at work among the power plants of the country. A campaign of instruction and inspection is being carried out to bring the use of fuel for the production of power to the highest possible degree of efficiency and economy.

W. A. Harko, assistant general manager of the Power Equipment Co., Philadelphia, has joined the signal corps of the United States army.

Iron and Steel Men in War Machine

Walter Robbins, Chief, Electrical Section, War Industries Board

WALTER ROBBINS was placed in charge of electrical equipment on the war industries board because he knew electrical machinery from the ground up. He is a striking example of the sort of practical and experienced men the government has called to perform various functions in its war machine, operating in Washington. Each one is peculiarly fitted for the duties he is expected to perform. Mr. Robbins has made things electrical his life's work and study, and when he assumed his service in Washington, he was vice president of the Wagner Electric Mfg. Co., St. Louis. That company was incorporated in 1891 to manufacture electrical apparatus, such as transformers, motors, generators, etc. It now has 15 sales agencies in the largest cities in this country as well as in foreign countries. It has grown from a modest start until now it is capitalized at $5,000,000. In 1911, its capital was $1,200,000. Its greatest growth has been made during the years Mr. Robbins was affiliated with the company. He entered the company's service as assistant general manager in July, 1906, and in 8½ years he rose steadily until in January, 1914, he was elected to the vice presidency to succeed James W. Bell. Several increases in capital stock have been made since 1911, but in 1916, it was raised to $2,000,000 and in 1917 to $5,000,000. A subsidiary of the company is the Wagner Electric Mfg. Co., Ltd., of Canada, capitalized at $50,000. Identification with so large a concern, whose product is known the world over, gave Mr. Robbins a peculiar fitness for his position in Washington and has enabled him to render the country some valuable service in connection with the electrical equipment requirements of the various war activities. It is to be readily seen that Mr. Robbins' duties are multiferous and are connected with every power boat, submarine, submarine chaser, ship, airplane, tank, crane and truck produced for the army and navy. He thus is identified in a large and real way with the war and its successful prosecution. One month after he was graduated from the University of Michigan in 1896 with a bachelor of science degree in electrical engineering, he entered the construction department of the Western Electric Co., at Chicago. For about a year and a half after January, 1897, he was employed by Pierce, Richardson & Neiler, Chicago, consulting engineers. In August, 1898, he returned to the Western Electric Co., and in 1902 was made superintendent of construction at Chicago. Four years later he became affiliated with the Wagner Electric Mfg. Co., St. Louis. He was born in Marquette, Mich., March 8, 1875, and was graduated from Marquette high school in June, 1892. He is a member of the American Institute of Electrical Engineers and several clubs. Mr. Robbins in his official duties at Washington sits with representatives of the Emergency Fleet corporation, the ordnance, medical and navy departments and the naval corps, all of which branches of the war machine have a strong and practical interest in the supplies supervised by his division. The application in war of electrical energy in some form has proved of the utmost importance and of the broadest scope.



WALTER ROBBINS

Concentrate on Fewer Plate Tools

Manufacturers Meet With War Industries Board and Plan Intensive Production of Larger Tools Exclusively—Railroad Buying Commences in Earnest—Shipyards Keep Up Demand—Neville Island List of 180 Issued

BECAUSE of the ever-increasing demands of the navy department and the Emergency Fleet corporation, it has become imperative that the output of plate-working machinery be greatly enlarged. At a recent meeting in Washington of approximately 95 per cent of the country's manufacturers of punching and shearing equipment, etc., with members of the war industries board, tentative plans were formulated by which it is expected the building of the usual many varieties of tools will be eliminated and plant effort concentrated on the production of a limited number of types and sizes of machines and tools required. A committee of manufacturers was appointed to work in conjunction with the machine tool section of the war industries board to that end. Whether or not this sort of plant jurisdiction will be extended remains for the future to develop.

While it seemed apparent last week that the government would supervise the overhead crane industry, this possibility has been passed, at least for the present. As a result the Bethlehem Shipbuilding Corp. has placed its order for 29 overhead and 13 gantry cranes of assorted sizes with the Cleveland Crane & Engineering Co., Wickliffe, O. Further orders are expected to follow. This corporation is at work on a list of about 50 machine tools for its Sparrows Point, Md., plant and is understood to have placed orders for all equipment needed at Alameda, Cal. The American Shipbuilding Co. is buying heavily in the Cleveland market for its yards at Cleveland, Detroit, etc. It is estimated that these orders recently averaged over $50,000 worth of equipment daily. Orders for large lathes are expected to be placed within a day or two. The Toledo Shipbuilding Co., Toledo, O., is likewise in the market. This seems to indicate that the yards on the Great Lakes are holding up their end of the shipbuilding program.

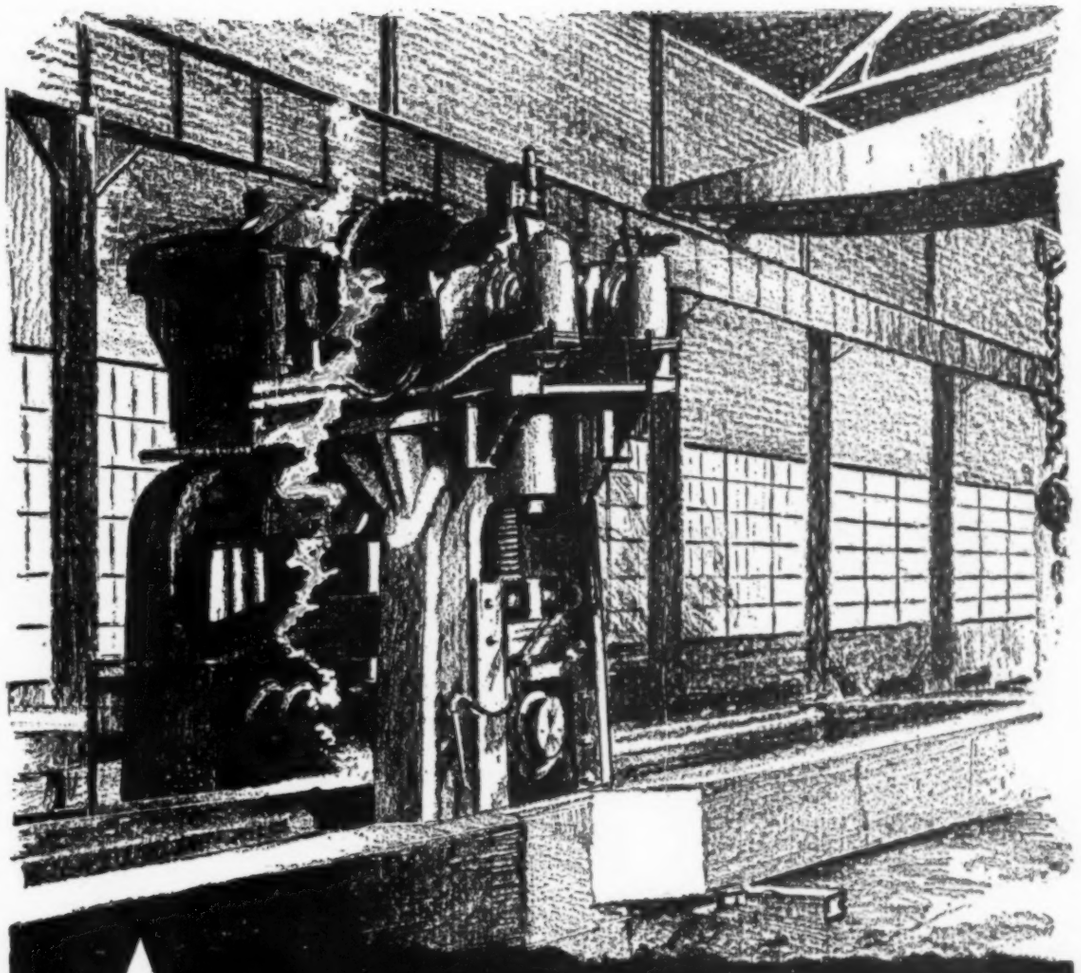
Railroad buying continues to feature all markets. In Cleveland, the New York Central railroad has begun to send out orders piece-meal and almost daily whenever it finds the equipment required for its shops in the Central West. It is understood that over half of its requirements have been placed. Price consideration is side-tracked since deliveries are the prime requisite. As it is, much of the machinery being ordered cannot be delivered inside of eight or nine months. It is feared that shops will not be ready for repairs in the fall and early winter in the measure desired by the railroad administration. Both the Pennsylvania and the Baltimore & Ohio railroads are buying in the east. The former is purchasing equipment for a locomotive shop at Marietta, Pa., and the latter has made arrangements through Westinghouse, Church, Kerr & Co., New York City, to buy about 50 miscellaneous tools for its shops at Cumberland, Md., and about the same number for Glenwood, Pa. It is expected that the Pennsylvania will soon buy equipment for its lines west and the Lake Erie & Western railroad is likewise a prospective purchaser.

No machine tool list has been issued for the Neville island ordnance plant although a list of about 180 cranes is out. This with the possibility of the government ordering a huge number of cranes in the east has caused much comment among eastern crane builders. The list of cranes that will be required by the Midvale Steel & Ordnance Co. for its gun plant at Nicetown, Pa., is still pending.

Bethlehem Crane List Awarded Cleveland Builder

CONTINUED heavy demand for cranes fairly eclipses all other activities in the eastern equipment market. A list of approximately 180 cranes for the ordnance plant to be erected on Neville island, near Pittsburgh, by the United States Steel Corp., has been the outstanding development of the past week and this in conjunction with the probability that the government will soon enter the market for a huge number of cranes has created an unusually tense situation in this line of equipment. The new list calls for one hundred and four 5-ton, twenty 10-ton, four 30-ton, one 40-ton, seven 50-ton, twelve 60-ton, four 100-ton, two 175 or 200-ton, and four 225-ton overhead travelers. Seven ladle cranes, including one of 300 tons, three of 175 tons and three of 100 tons capacity each, are inquired for, and also eight 5-ton charging cranes and three open-hearth floor cranes. The list of machine tools required for the Neville island plant has not as yet been issued.

It now appears that the possibility of government supervision in the matter of overhead cranes has passed, at least for the present. As a result, business in overhead cranes has been allowed to continue as heretofore, and the list of the Bethlehem Shipbuilding Corp., which was the largest inquiry to be affected by this possibility last week, has been placed with the Cleveland Crane & Engineering Co., Wickliffe, O. This award involved ten 5-ton, eight 10-ton, six 30-ton, one 50-ton, one 20-ton and three 25-ton overhead cranes; six 10-ton and four 5-ton double-legged gantry cranes, and three 15-ton single-legged gantry cranes. Action on the traveler and hammerhead cranes is still pending. The Cleveland Crane & Engineering Co. also has been awarded two 5-ton



AGATHON
ALLOY STEELS

Are a typical American product. Their achievements were made possible thru characteristic American vision and enthusiasm.

Backed by these all-potential virtues they will ALWAYS serve your purpose best.

AGATHON STEELS TRADE MARK

Agathon City THE CENTRAL STEEL CO. Massillon, Ohio

SALES OFFICES
Detroit, F. WALTER GUIBERT, 326 Ford Bldg.
Cleveland, HAMILL-HICKOX CO., Hickox Bldg.
Chicago, C. H. BEACH, Manager, Peoples Gas Bldg.
Philadelphia, FRANK WALLACE, Manager, 603 Widener Bldg.
Syracuse, N. Y., T. B. DAVIES, Manager, 621 University Block.

and two 10-ton overhead cranes by the Savage Arms Corp., Sharon, Pa.; and a 10-ton hand crane by the Pratt Engineering Co., Atlanta, Ga.

Included in business pending at this time are four 20-ton and one 10-ton travelers for the Federal Shipbuilding Co., Kearney, N. J., this list having been recently revised. The Pennsylvania railroad is inquiring through its Philadelphia office for one 10-ton and one 3-ton bridge crane, the transaction number being 14495; the Meade-Morrison Mfg. Co., East Boston, is in the market for a 10-ton traveler; the American Bridge Co., 30 Church street, New York City, is inquiring for two overhead cranes, of 30 and 50 tons capacity respectively; the Spicer Mfg. Co., South Plainfield, N. J., wants a 10-ton overhead and a 10-ton gantry; the Cambria Steel Co., Philadelphia, in addition to ninety-four 2-ton hoists, is now in the market for a 15-ton bridge crane; the Bayles Shipyard, Inc., Port Jefferson, Long Island, N. Y., is receiving bids on two overhead cranes of 5 tons capacity each, and the Worthington Pump & Machinery Corp., New York City, is inquiring for a 15-ton overhead crane for its plant at Holyoke, Mass. The large list of the Midvale Steel & Ordnance Co. still is pending.

The eastern machine tool market has been only fairly active during the past week, the holiday on July 4, no doubt, restricting business somewhat. A large buyer has been the New York Shipbuilding Corp., which has closed on considerable equipment for the proposed addition to its plant at Camden, N. J. Westinghouse, Church, Kerr & Co., New York City, has issued an inquiry for about 150 miscellaneous tools for the Baltimore & Ohio railroad shops at Cumberland, Md., and a list understood to be about as large for the Baltimore & Ohio shops at Glenwood, Pa. The Vulcan Iron Works, Jersey City, N. J., will close shortly on a list of 10 machines for its new boiler shop. The Pennsylvania railroad is in the market for a number of miscellaneous tools for a locomotive shop now under construction at Marietta, Pa. Buying will be done through the Philadelphia office. The Bethlehem Shipbuilding Corp. now is acting on a list of about 50 tools for its plant at Sparrows Point, Md. The purchase of machine tool equipment for the Bethlehem company's Alameda plant is understood to have been completed.

Railroad Buying Now Under Way

ATTENTION of machine tool dealers in the Cleveland market is divided between orders being placed by the railroads and buying on the part of the shipyards. With the unwinding of considerable red tape, the New York Central railroad is placing orders on its large list of requirements and several supplementary ones for its central western shops. Dealers are receiving orders almost daily and the matter of price seems to be a secondary consideration, since delivery is the chief factor. It is anticipated that the Pennsylvania railway will be a large buyer for its lines west of Pittsburgh in the near future. Order placing by the Lake Erie & Western is expected to take place shortly. A purchasing agent's job right now is a sinecure. It has become merely one of writing orders. The engineers' department specifies the equipment desired and after a source of supply is determined, the order is written. This likewise applies to other lines than railroad buying. Another big buyer in the Cleveland market is the American Shipbuilding Co., for Cleveland, Detroit, etc. Its orders have aggregated in excss of $50,000 worth daily for sveral days. It is understood that this company's requirements of punching and shearing equipment are not yet filled. Orders from it for large lathes and other large machines are expected daily. The Toledo Shipbuilding Co., Toledo, O., has been in the market for lathes, drills, grinders, etc. The Warner & Swasey Co., Cleveland, continues to enter the market periodically and it recently inquired for a 16-inch high duty shaper. Wood-working machinery, planers, etc., are desired by the Theodore Kuntz Co., Cleveland, which is at work on auto truck and transport wagon bodies for the government. The American Clay Machinery Co., Bucyrus, O., and the American Steel & Machinery Co., Massillon, O., are inquiring for shell-making machinery for working 6-inch shells, etc. It is stated that the Grant Motor Car Corp., Cleveland, is still in the market for machinery to make auto truck trailers, although orders for most of the equipment asked for have been placed. The Templars Motor Corp., Cleveland, have been heavy buyers of equipment and while they continue to come into the market at frequent intervals for shell-making machinery, it is believed that the major portion of its requirements have been placed.

Plans Intensive Campaign for Plate Machines

TENTATIVE plans to increase the output of plate-working tools were discussed at a meeting of tool builders held in Washington last Saturday. In attendance at this meeting were representatives of the war industries board, army and navy engineers, officers of the Emergency Fleet corporation and several subcontractors. An increased output of punching and shearing machinery, bending rolls, plate planers, shearing tables, etc., is absolutely necessary if the war demands of the navy and the Emergency Fleet corporation are to be met. Practically 95 per cent of the manufacturers of this class of material were represented at the conference. As a result the building of the usual large variety of tools will be eliminated from some shops whose efforts will then be concentrated on a maximum production of a limited number. Contracts will be distributed to concerns that have no urgent war orders. With the aid of patterns, drawings and the co-operation of regular manufacturers these will be able to produce standard equipment. A committee of manufacturers was appointed to work in conjunction with G. E. Merryweather, chief of the machine tool section of the war industries board. H. J. Bailey, of Hilles & Jones, Wilmington, Del., was made chairman of this committee, while W. R. Beatty, of the Beatty Machine & Mfg. Co., Hammond, Ind.; W. H. Harman, Southwark Foundry & Machine Co., Philadelphia; Walter D. Sayle, Cleveland Punch & Shear Works, Cleveland, and Fred C. Avery, Long & Allstatter Co., Hamilton, O., are its members. This committee will endeavor to carry out the suggestions advanced at the meeting as well as those that may develop as the effort progresses.

Chicago Trade Slackens

MACHINERY trade in the Chicago district has slackened due to the commencement of the vacation period. Equipment for the $6,000,000 Symington munition plant has been placed, East Chicago dealers getting a share. The Rock Island railroad has issued a small list of tools although other railroad business is lacking. Additional shell and munition contracts coming to the west promise increased demand. Second hand equipment is in demand to make up the lack of new equipment. The Globe Seamless Steel Tubes Co., Milwaukee, Wis., has been in the market for equipment for the large extension it is making to its present mill at Twenty-third avenue and Burnham street. It has purchased five cranes from the Pawling & Harnischfeger Co., Milwaukee, but desires one more locomotive crane.

W.S.S.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Along the Middle Atlantic Seaboard

ALBANY, N. Y.—The Atlantic Woolen Mills, Inc., which recently raised its capital stock to $100,000 in addition to manufacturing fine woolens will do a general business in wool waste and carbonizing of woolen rags. The company probably will enlarge its plant.

BUFFALO.—The Buffalo Dry Dock Co. will build a $10,000 machine shop.

BUFFALO.—The Ferguson Steel & Iron Co. has had plans prepared for a mold shop, 50 x 200 feet.

BUFFALO.—The Buffalo General Electric Co. has had plans prepared for the erection of an electric power station, 100 x 100 feet.

BUFFALO.—The Automatic Transportation Co. will take bids at once for the erection of a 3-story warehouse and factory, 75 x 100 feet, to cost $75,000.

BUFFALO.—Final plans have been made for the erection of the Mother of Mercy hospital on Abbot road. The building will be 8 stories, 50 x 300 feet.

KINGSTON, N. Y.—Charles Michael has the contract for the erection of a $30,000 factory for the Herbert Brush Mfg. Co.

NEW YORK.—The Cardinal Tool Co. recently was incorporated with a capital of $10,000 to manufacture tools, machinery, etc.

NEW YORK. — The Combustion Control Co. has been incorporated to manufacture boilers, furnaces, etc., and appliances for measuring heat, with capital of $100,000. The incorporators were N. Hiss, F. D. Potter, and W. B. Raymond, all of New York.

ROCHESTER, N. Y.—The Bridgeford Machine Tool Works will build a machine shop, 60 x 200 feet.

SYRACUSE, N. Y.—The Semet-Solvay Co. has completed arrangements for the erection of a $4,000,000 picric acid plant.

BEAVER, PA.—Ground has been broken by the Pittsburgh Crucible Steel Co. for a new blast furnace to cost approximately $2,000,000. Although the plant will not be completed for several months, all necessary equipment is on the ground ready for use.

Government Inquiries

BIDS on the following equipment are desired by the navy department bureau of supplies and accounts:

Two 15-ton and two 5-ton electric traveling cranes, 4781½, July 12, Mare Island.
Two motor driven shaping machines, 4789½, July 12, Boston.
Chain hoists, 4816½, July 19, Boston.
Pipe threading machine, 4844½, July 15, Charleston.
Shaping machine, 4846½, July 15, Philadelphia.
Hoists, 4848½, July 15, Boston.
Four brass finishing lathes, 4854½, July 12, Brooklyn and Philadelphia.
One knife grinding machine, 4855½, July 12, Washington.
Two saw fitting and setting machines, 4857½, July 12, Washington.
Two band saws, 4858½, July 12, Washington.
Sensitive drill and crank shaper, 4813½, July 12, Philadelphia.
One sawing and jointing machine, 4815½, July 12, Hampton Roads.
One press, 4826½, July 15, Mare Island.
One bolt heading machine, 4840½, July 15, Iona Island.
Hoists, 4897½, July 15, Mare Island and Brooklyn.
Band saw, shaper and swage, 4908½, July 15, New Orleans.
Planer, 4921½, July 19, Rockaway Beach.
Machine tools, 4931½, July 19, Boston.
One extension gap lathe and spares, 4933½, July 19, f.o.b. works.
One electric spot welding machine, 4935½, July 19, Philadelphia.

Schedule numbers, dates of opening and places of delivery follow the specifications of the tools and machines.

BRADDOCK, PA. — The Montgomery Foundry & Mfg. Co. has been incorporated with headquarters at Pottstown, Pa. It was capitalized at $100,000.

CHESTER, PA. — The Sun Shipbuilding Co. is said to be contemplating the erection of an addition.

CONNELLSVILLE, PA. — Frank A. Tarr and R. A. Henry, Dawson, Pa., officers of the Dawson-Connellsville Fuel Co., will fit up a mine near Fairmount, W. Va.

FRANKLIN, PA.—The Franklin Quality Refining Co. recently was incorporated to engage in the refining business. It was capitalized at $10,000.

MANORVILLE, PA. — The Triple Airless Tire Co. has let the contract for the erection of a new plant.

MIDDLEBURG, PA.—The Liverpool Spinning Mill will build an addition to its plant.

NEW CASTLE, PA.—The removal of the B. & O. division engine house and car shops from this city to Youngstown, O., has been authorized. The undertaking will involve an outlay of $327,000.

PHILADELPHIA.—S. D. Allen & Co. has been incorporated to manufacture machinery, with $10,000 capital.

PHILADELPHIA.—The S. A. Ashman & Son Co. recently awarded the contracts for extensions and improvements to its plant.

PHILADELPHIA.—The Bellevue Worsted Mills will build a 1-story brick and steel structure, 27 x 85 feet. W. E. Dyer, of Philadelphia is architect.

PHILADELPHIA.—The Sterling Engineering Co. recently was incorporated with $50,000 capital to engage in the manufacture of machinery.

PHILADELPHIA.—The Hero Mfg. Co. is contemplating the erection of a machine shop to cost $25,000. The Austin Co., Cleveland, has the contract.

PHILADELPHIA.—The Turner Concrete Steel Co. recently obtained a permit to erect an addition to its furnace house, at a cost of $20,000.

DELAWARE, MD.—The Burris Garage & Machine Co. was incorporated with a capitalization of $50,000. The incorporators are, James L. Holdsworth, Samuel L. Burris and William D. Holdsworth.

Activities in the Central States

MENASHA, WIS.—The Graef Wire & Mfg. Co. has selected Appleton, Wis., as the site of its new plant, which will cost about $85,000.

HOQUIAM, WIS.—The plant of the Lamb Machine Co. recently was damaged by fire. The loss was estimated at $4000. The plant will be rebuilt.

MILWAUKEE. — The Richardson-Phenix Co. will erect an office building to cost $15,000. The company is at present building several shop additions.

MILWAUKEE.—The O'Neil Paint & Oil Co. recently authorized an increase in the capital stock from $350,000 to $500,000 to take care of increased business.

MILWAUKEE.—The erection of a steel bridge, 145 feet long, over the Milwaukee river at the North dam is contemplated by the Milwaukee department of public works. Plans and estimates are being prepared by C. E. Malig, engineer.

MILWAUKEE. — Work was commenced recently on two shop additions for the Globe

OHIO

Quality PLUS Service

STEEL CASTINGS

The whirring of the airplane—the roaring of the fast express—the thundering chug of the rapidly approaching motor truck, all *proclaim the victory of Ohio Steel Castings over "Power"* by proving the ability of these castings to withstand the terrific, racking, straining shocks of the mightiest engines constructed by man.

If you are in need of Tractor, Motor Truck, Automobile or other small castings—castings of a quality and strength fit for the most strenuous service specify *Ohio Steel Castings.*

Let us figure on your requirements.

The Ohio Steel Foundry Co.

Plants

Springfield, Ohio Lima, Ohio Bucyrus, Ohio

Recent Changes Among the Trade

ANSON W. RICHARDS, manager of the New York office of the Simmons Machine Co., Inc., has moved his offices from 1001 in the Singer building to a larger suite in Rooms 801 and 802.

The L. & I. J. White Co., Buffalo, manufacturer of shear blades and machine knives, has established a sales office in the Jenkins Arcade building, Pittsburgh, which is in charge of A. Fred Betram.

The Phoenix Iron Co. has moved its main offices from 410 Walnut street, Philadelphia, where it has been located for many years. Its new quarters are located in the Franklin Trust building, 22 South Fifteenth street, Philadelphia. The Phoenix Bridge Co. also will have its headquarters in the latter building.

The United Metal Trades association has moved its headquarters from 500 Central building, Seattle, to 806 Alaska building that city.

The T. J. Rafferty & Co., Inc., Worcester, Mass., iron and steel scrap and new and secand-hand machinery, has opened offices in the Union Trust building, Providence, R. I., to care for its business in southern New England.

The Aspromet Co., Pittsburgh, formerly the Asbestos Protected Metal Co., has moved its Chicago office to the Railway Exchange building. J. T. O'Neill continues in charge as district manager. The telephone number is Harrison 3991.

The Blaw-Knox Co., Pittsburgh, has removed its San Francisco office from the Rialto building to its new office and warehouse at 528 Second street. C. B. Pulis is in charge.

The Pittsburgh Testing Laboratory on July 1 moved from its temporary quarters in the B. F. Jones Law building, Pittsburgh, to its new office and laboratory buildings at 612-620 Grant street, that city.

The Boston office of the Sullivan Machinery Co., Chicago, is now located in room 516, Boston Safe Deposit & Trust Co. building, 201 Devonshire street. George E. Wolcott is New England sales manager.

J. V. W. Reynders, consulting engineer, has moved his office from room 2218 to suite Nos. 2047-48-49 Equitable building, 120 Broadway, New York City.

The Bird-Archer Co. has moved its Chicago office to 1105 Peoples Gas building, to obtain larger space. The company recently has opened a plant in Chicago and one at Cobourg, Ont.

The Louis Sacks Co., operating one of the largest foundries in Newark, N. J., is moving into the Boonton foundry, owned by W. S. Barstow & Co., 50 Pine street, New York. The Sacks company will do all of its light foundry work there in the future, having leased the property for a period of three years.

Seamless Steel Tubes Co., which will be of brick and steel construction, 130 x 250 feet and 130 x 170 feet.

MILWAUKEE.—Ground has been broken by the Hercules Steel Castings Co. for its new electric steel foundry. The main shop will be 90 x 275 feet. A 5-ton electric furnace, a 10-ton crane and other equipment has been ordered.

MILWAUKEE. — Additions which will double its capacity will be erected by the Gerlinger Steel Castings Co. Contracts have been awarded for the erection of a brick and steel foundry addition, 80 x 200 feet. Orders have been placed for a 3-ton electric furnace and a 5-ton electric foundry crane.

STURGEON BAY, WIS.—The Leathem & Smith Co. has practically closed contracts with the shipping board for the construction of six tugs and will enlarge its shipyards.

GRAND RAPIDS, MICH. — Plans have been drawn by Architects Osgood & Osgood for a 5-story addition to the plant of the Wolverine Brass Works. The building is to be 90 x 100 feet. Bids on the construction of the building closed several days ago.

MATTOON, ILL.—The Chuse Engine & Mfg. Co. will build a $75,000 manufacturing building.

SPRINGFIELD, ILL. — The Hicks Fire Clay Co. recently was incorporated with capital of $150,000 by Charles T. Hicks, Edward C. Perace and Walter C. Holmes.

INDIANAPOLIS. — Approval has been given for the erection of a $40,000 school building at Speedwell, a suburb.

INDIANAPOLIS.—The Mid-West Engine Co. has been incorporated with capital of $3,500,000 to engage in the business of manufacturing engines of all kinds. The company is a consolidation of the Hill Pump Co., Anderson, Ind., and the Lyons-Atlas Engine Co., Indianapolis.

KOKOMO, IND. — Arrangements have been completed for the construction of a large shell plant here by the government to cost $2,750,000. The plant will be operated by the Kokomo Steel & Wire Co.

BLUFFTON, O.—D. W. Bixler, clerk of the board of public affairs, awarded the contract for remodeling the light and water plant to the Skelton Enginering Co., Toledo.

CINCINNATI.—Changes costing $7000 are to be made to the plant of the Cincinnati Steel Castings Co.

CINCINNATI.—The first step to the proposed general improvement of railroad terminals here has been taken by the committee representing railroads entering Cincinnati.

CINCINNATI.—Plans are being prepared for the erection of an office and factory building, 40 x 100 feet, to cost $60,000 for the McGowan Pump Co.

CINCINNATI.—The Peerless Foundry Co. let the contract to the Marcus Building Co. for the erection of a plant, 120 x 200 feet and 60 x 120 feet, to cost $75,000.

CLEVELAND.—The Austin Co. is preparing plans for the erection of a machine shop for the Pennsylvania railroad at Logansport, Ind.

CLEVELAND.—Bids are being taken for the erection of a storage and office building for the Akron Towel & Supply Co., Chicago. The building will cost $25,000.

CLEVELAND.—Harshaw, Fuller & Goodwin have obtained a permit from the city building department to erect a building foundation, 200 x 260 feet, to cost $3000.

CLEVELAND. — The Cleveland Frog & Crossing Co. recently obtained a permit to construct a storage building, 40 x 60 feet, to cost $3000.

CLEVELAND.—The Cleveland Smelting & Refining Co. has broken ground for the erection of a concrete storage building, 60 x 140 feet to cost $20,000. Three other buildings, each to be 60 x 120 feet, are to be erected later.

COLUMBUS, O. — Architect Richard Z. Dawson recently announced that the addition to the plant of the Atlas Brass Foundry Co., has been completed, machinery installed and the company ready to occupy the building.

DEFIANCE, O.—County Auditor Decker will close bids July 17 for the construction of two bridge abutments.

DENNISON, O.—Freight yards for the Pennsylvania railroad, to cost between $2,000,000 and $3,000,000 will be laid out here within a short time.

HAMILTON, O.—The Hamilton Brass & Aluminum Castings Co., recently was incorporated with a capital of $15,000.

LONDON, O. — County Auditor Blacker will open bids July 22 for the repairing of several bridges in Madison county.

YOUNGSTOWN, O. — The Mahoning Foundry Co. has broken ground for the erection of a foundry and storage house.

YOUNGSTOWN, O.—The directors of the Petroleum Iron Works Co. have increased the company's capital with a view of erecting several plant extensions.

CHAVIES, KY.—The Coneva Coal Corp., recently incorporated, is said to be contemplating the erection of additions to a plant which it has taken over.

FULTON, KY.—The Illinois Central railroad is having plans prepared for an addition, 40 x 150 feet, to its boiler house and also the erection of an electric turntable to cost $225,000.

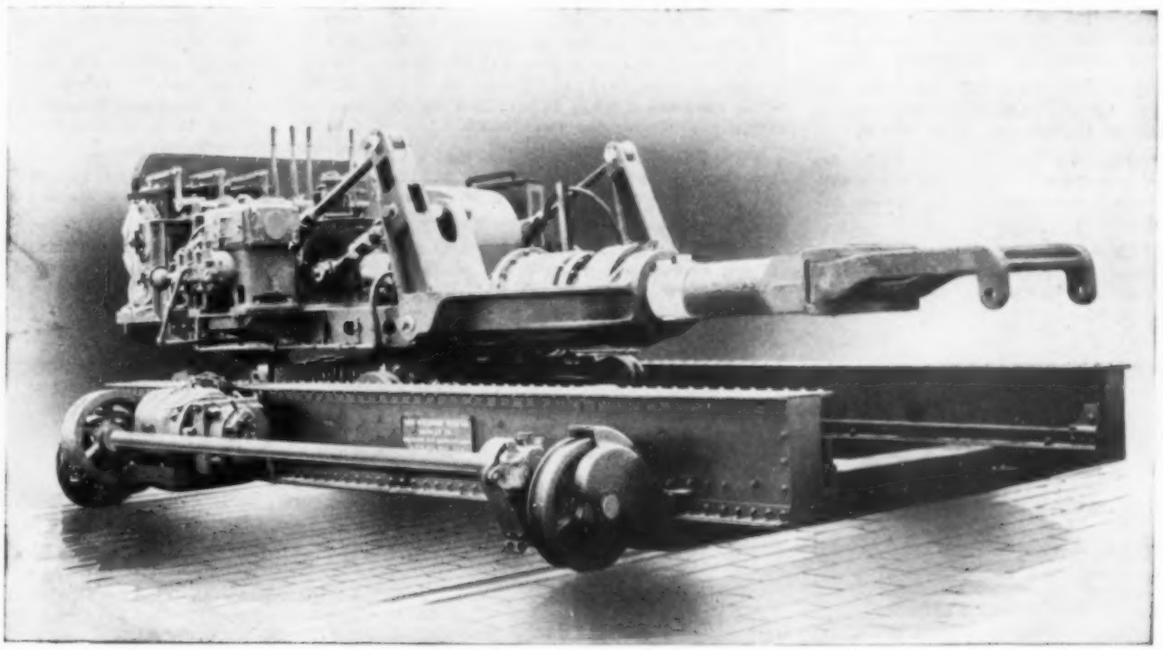
LOUISVILLE, KY.—The Louisville Cotton Mills let the contract for the erection of a $25,000 factory addition to the National Concrete Construction Co.

WHITESBURG, KY.—The Wallens Creek Collieries Co. has purchased the Wallens Creek Coal Co. plant at Wallens Creek and has announced that a number of improvements are to be made.

MULLENS, W. VA.—The Wyoming Water & Light Co. will spend $50,000 for improvements to its plant. O. L. Collier is in charge of the work.

W S M

STEEL PLANT EQUIPMENT
COKE OVEN MACHINERY
GAS PRODUCERS
ORE AND COAL HANDLING MACHINERY
SPECIAL CRANES
MINING MACHINERY
HYDRAULIC TURBINES



Manipulators

For handling wheels, blooms, slabs, billets, ingots, etc., this Manipulator has been developed. It charges and draws heating furnaces and manipulates pieces at the presses, hammers or mills. The tongs revolve about vertical and horizontal axes and will pick up material from the floor, car or roller table, making the machine adaptable to many purposes.

We build these machines in all capacities and in floor type or crane type design.

Bulletin A 7, "W-S-M Charging Machines and Manipulators" will be sent on request.

THE WELLMAN-SEAVER-MORGAN CO.

CLEVELAND, OHIO, U.S.A.

Among New England Factories

MACHIAS, ME.—The Machias Ship Construction Co. has been incorporated with $100,000 capital by Howard A. Flynn, Charles N. Taylor and William C. Dinsmore.

LACONIA, N. H.—William Clow & Son have let the contract for a brick and reinforced concrete, 4-story, 40 x 50-foot and a 1-story, 31 x 35-foot addition.

RUTLAND, VT. — The Rutland railroad will build a 105 x 263-foot construction and locomotive shop, 125 x 172-foot coach repair shop and addition, to cost $300,000.

BOSTON.—The John E. Leahy Co. has been awarded the contract for repairing an iron pier at Marine park, South Boston.

BOSTON.—The Murphy Iron Works has obtained a contract for furnishing and installing materials for stokers at the Boston city hospital.

BOSTON.—The Cox Mfg. Co. has been incorporated to make electrical, mechanical and other instruments and appliances with $40,000 capital.

CHELSEA, MASS. — The Levendorf & Meltzer Co. has been incorporated to deal in iron and metals with $10,000 capital.

CHELSEA, MASS.—The Chelsea Foundry Co. will build a terra cotta, 1½-story, 60 x 100 x 25-foot addition to its foundry.

CHELSEA, MASS.—The Revere Rubber Co. will build an iron, 1-story, 36 x 150 x 25-foot storehouse.

SOUTH BOSTON, MASS. — The Linde Air Products Co. has let the contract to the J. W. Bishop Co. for a brick and reinforced concrete, 1-story, 110 x 156-foot manufacturing plant and a brick, 1-story, 28 x 38-foot garage and oilhouse, to cost $90,000.

WORCESTER, MASS. — The Rockwood Sprinkler Co. of Massachusetts will build a brick and cement, 1-story, 24 x 52-foot annealing house.

NEWPORT, R. I.—The government has let the contract for a brick and reinforced concrete, fireproof, 2-story, 35 x 67-foot addition to the commissary building at the naval training station for $40,500.

PAWTUCKET, R. I.—The U. S. Finishing Co. has let the contract for a brick, 1-story, 25 x 87-foot addition to cost $50,000.

BRIDGEPORT, CONN.—The Lake Torpedo Boat Co. has been granted a permit for a concrete, 40 x 100-foot addition to its plant.

HARTFORD, CONN. — J. Rosenberg & Co. will build a mill construction warehouse to cost $16,000.

NEW LONDON, CONN.—The government will build a fuel and oil storage plant to cost $60,000, an emergency hospital to cost $150,000 and four wards to cost $100,000 at the submarine base.

STAMFORD, CONN.—The Yale & Towne Mfg. Co. has let the contract for an addition to its foundry.

STAMFORD, CONN.—The Mianus Mfg. Co. will build a brick and reinforced concrete, 4-story, 40 x 150-foot addition to its mill, to cost $40,000.

Up and Down the Pacific Coast

SEATTLE. — The Gulowsen Grei Engine Co. is ocntemplating the erection of a factory building, which when completed will represent an investment of $500,000. The main machinery building will be 175 x 175 feet. A foundry, pattern shop, storage room and stock room are included in the plans.

CORCORAN, CAL.—Voters recently voted for the issuance of $70,000 in bonds, for the erection of a new water works system.

MARE ISLAND, CAL.—A steel engine house is to be erected at the United States coaling station at Tiburon, Cal.

OAKLAND, CAL.—A blacksmith shop and three transformer buildings are being erected by the Moore Shipbuilding Co.

OAKLAND, CAL.—H. Robinson Hardware Co. will build a 1-story reinforced concrete factor yto cost about $30,000.

SACRAMENTO, CAL.—Final plans are to be made in September on a state building to be constructed as an addition to the capitol building.

SAN FRANCISCO.—Eaton & Smith will construct a reinforced concrete bridge in San Jose to cost $55,800.

SAN FRANCISCO. — Cahil-Vensano will build a $45,000 1-story steel and corrugated steel factory building for the Pacific Foundry Company.

SAN FRANCISCO. — Reconstruction of pier No. 1, to cost $250,000, will be undertaken soon by the state board of harbor commissioners.

SAN FRANCISCO. — The San Francisco board of public works has awarded a contract to the Sierra Railroad Co. for furnishing steel rails and spikes.

SAN FRANCISCO.—The Union Construction Co. is taking figures for a 1-story steel frame and mill construction plate shop, 90 x 380 feet. The contract for the steel has been awarded the Pacific Steel Co.

SAN FRANCISCO.—Two 2-story mill construction buildings, to cost $200,000, will be erected by the Remar Baking Co. The steel contract has been let to the Western Iron Works.

New Business in Eastern Canada

NORTH VANCOUVER, B. C.—The William Lyall Shipbuilding Co. will erect an addition to cost about $100,000. E. D. Cook is manager.

POINT GREY, B. C.—The British Columbia Box Co. will build a sawmill to cost about $100,000. Thomas Harvil is manager.

PORT CLEMENTS, B. C.—W. P. Lynch will build a sawmill to cost $60,000 and will be in the market for machinery and equipment.

BRANTFORD, ONT. — The Verity Plow Co. will build a factory addition to cost $35,000. W. G. Ranton is secretary.

BRANTFORD, ONT. — The Cockshutt Plow Co. will build a 1-story brick addition to its boiler house to cost $10,000.

HAMILTON, ONT.—About $12,000 damage was caused by fire which broke out in the rolling mill of the Steel Co. of Canada, recently.

RAINY RIVER, ONT. — The Canadian Northern Railway Co. is demolishing the old 10-stall roundhouse here which will be replaced by a new structure.

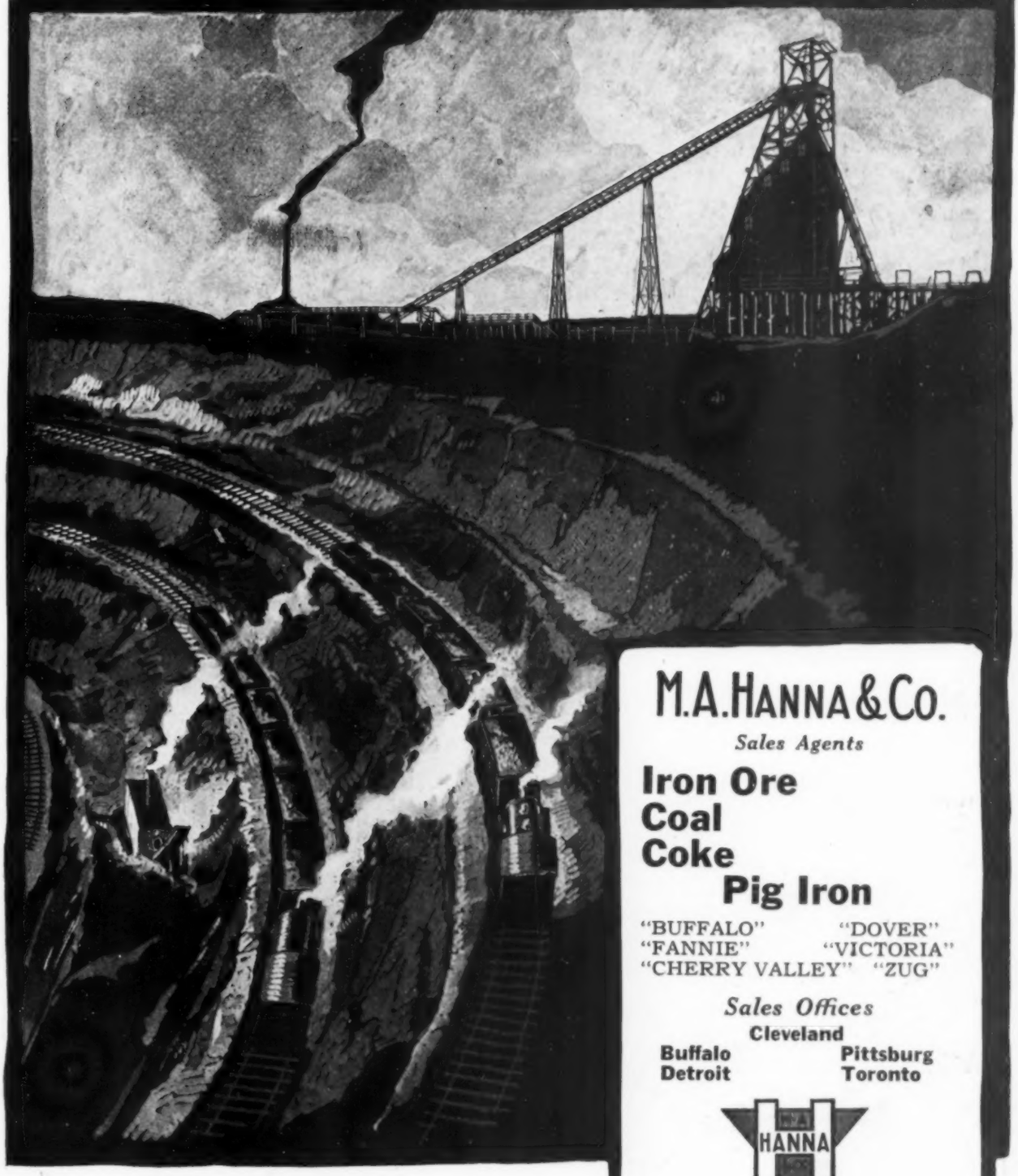
TORONTO, ONT. — The Universal Tool Steel Co. has let contracts for the erection of a factory addition to cost $45,000.

TORONTO, ONT.—The Martin Senour Co. is planning the erection of a factory building to cost $60,000.

TORONTO, ONT.—The British Forgings, Ltd., is erecting a factory building at a cost of $10,000.

TORONTO, ONT. — The Jefferson Glass Co. has taken out a permit to rebuild its factory which was recently badly damaged by fire. The new structure will cost $15,000.

HANNA



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"FANNIE" "VICTORIA"
"CHERRY VALLEY" "ZUG"

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Cleveland
Buffalo **Pittsburg**
Detroit **Toronto**

M.A. HANNA

Iron and Steel Prices

Corrected to Tuesday Noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports	
Old range Bessemer, 55 iron	$5.95
Mesabi Bessemer, 55 iron	5.70
Old range non-Bess., 51½ iron	5.20
Mesabi non-Bess., 51½ iron	5.05

WAREHOUSE PRICES

Steel bars, Chicago	4.17c
Steel bars, Cleveland	4.07c
Steel bars, Detroit	4.13c
Steel bars, Philadelphia	4.13c
Steel bars, New York	4.145c
Steel bars, St. Louis	4.24c
Steel bars, Cincinnati	4.13c
Steel bars, St. Paul	4.395c
Steel bars, Buffalo	**4.05c**
Iron bars, Buffalo	4.715c
Iron bars, Chicago	**4.10c**
Iron bars, Cleveland	4.67c
Iron bars, Detroit	**4.75c**
Iron bars, St. Louis	4.24c
Iron bars, Cincinnati	4.13c
Iron bars, Philadelphia	4.60c to 4.73c
Iron bars, New York	4.745c
Shapes, Chicago	4.27c
Shapes, Detroit	4.23c
Shapes, St. Louis	4.34c
Shapes, St. Paul	4.495c
Shapes, New York	4.245c
Shapes, Cleveland	4.17c
Shapes, Philadelphia	4.23c
Shapes, Buffalo	4.215c
Shapes, Cincinnati	4.23c
Plates, Buffalo	4.465c
Plates, Chicago	4.52c
Plates, Detroit	4.48c
Plates, St. Louis	4.59c
Plates, St. Paul	4.74c
Plates, New York	4.495c
Plates, Cleveland	4.42c
Plates, Philadelphia	4.48c
Plates, Cincinnati	4.48c
No. 10 blue anl. sheets, Chi.	5.52c
No. 10 blue anl. sheets, Cleve.	5.42c
No. 10 blue anl., Buffalo	5.465c
No. 10 blue anl., sheets, St. L.	5.59c
No. 10 blue anl. sheets, Cinci.	5.48c
No. 10 blue anl. sheets, St. Paul	5.745c
No. 10 blue anl. sh., Detroit	5.48c
No. 28 black sheets, Chgo.	6.52c
No. 28 black sheets, Cleve.	6.42c
No. 28 black sheets, Cinci.	6.48c
No. 28 black, Detroit	6.48c
No. 28 black sheets, St. L.	6.59c
No. 28 black sheets, St. Paul	6.745c
No. 28 galv. sheets, Chgo.	7.77c
No. 28 galv. sheets, Cleve.	7.67c
No. 28 galv. sheets, Cinci.	7.73c
No. 28 galvanized, Detroit	7.73c
No. 28 galv. sheets, St. L.	7.88c
Hoops, Cleveland	4.92c
Hoops, Detroit	4.98c

IRON AND STEEL SCRAP

(Prices in Gross Tons)

STEEL WORKS USE

Bundled sheets, Cincinnati	$22.50 to 23.00
Bundled sheets, Pittsburgh	22.00
Bundled sheets, Cleveland	24.50 to 25.50
Bundled sheets, Buffalo	24.00 to 25.00
Boiler plate, cut, No. 1, Chg.	25.00 to 26.00
Boiler plate, cut No. 1, St. L.	**25.50 to 26.00**
Frogs, switches, guards, St. L.	**28.50 to 29.00**
Frogs, switches, guards, Chgo.	**29.00**
Heavy melting steel, Pitts.	**29.00**
Heavy melting steel, Buffalo	**30.00**
Heavy melting steel, Chgo.	**29.00**
Heavy melt'g steel, Cleveland	**29.00**
Heavy melting steel, Cinci.	28.00 to 28.50
Heavy melt'g steel, east. Pa.	**28.00 to 29.00**
Heavy melting steel, N. Y.	25.50 to 26.00
Heavy melting steel, St. L.	28.00 to 28.50
Heavy melt'g steel, Birming.	24.00 to 26.00
Hydraulic press. sheets, Cleve.	28.50 to 29.00
Hydraulic press. sheets, Pitts.	26.00
Hydraulic press. sheets, Chgo.	26.00 to 26.50
Knuckles, couplers, Chgo.	**34.00**
Knuckles, coup., St. Louis	**32.50 to 33.00**
Low phos. steel, Buffalo	**37.50**
Low phos. steel, Pittsburgh	**39.00**
Low phos. crops eastern Pa.	39.00
Low phos. guaranteed E. Pa.	36.50
Shoveling steel, Chicago	29.00
Shoveling steel, St. Louis	27.00 to 27.50
Springs, Chgo.	34.00
Steel rails, short, Chicago	**34.00**
Steel rails, short, Cleveland	**34.00**
Steel rails, short, St. Louis	**30.75 to 31.25**
Steel rails, old, Birmingham	24.00 to 25.00
Stove plate, Chgo.	**25.50 to 26.50**
Stove plate, Cincinnati	22.50 to 23.00
Stove plate, St. Louis	**22.50 to 23.00**
Stove plate, N. J. points	24.50
Stove plate, Birmingham	20.00 to 22.00
Stove plate, Buffalo	24.00 to 25.00
Stove plate, eastern Pa.	24.00 to 25.00
Stove plate, Cleveland	25.00 to 25.50
Stove plate, Pittsburgh	22.00

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.40
Newark, N. J.	4.40
Boston	4.60
Philadelphia	4.10
Pittsburgh	1.40
St. Louis	4.60
Minneapolis, St. Paul	5.70
Buffalo to:	
Albany, N. Y.	$1.75
New England (rail)	3.90
New York and Brooklyn (rail)	3.90
Virginia furnaces to:	
Philadelphia	$4.10
New England	4.70
Brooklyn, Jersey City, Newark	4.40
Birmingham, Ala., to:	
Boston	$7.50
Cincinnati	3.60
Chicago	5.00
Cleveland	5.00
Louisville, Ky.	3.30
Minneapolis, St. Paul	7.30
New York (r. and w.)	7.50
Philadelphia (r. and w.)	6.60
Pittsburgh	6.10
Savannah, Ga.	3.40
St. Louis	4.25
Chicago to:	
Des Moines	$3.50
Minneapolis, St. Paul	2.50
Milwaukee	.60
Moline, Ill.	1.40
Omaha	4.50
St. Louis	1.90
Ironton and Jackson, O., to:	
Chicago	$3.75
Cincinnati	1.75
Cleveland	2.40
Detroit	2.60
Indianapolis	2.30
Minneapolis, St. Paul	5.70
Duluth, Minn., to:	
Minneapolis, St. Paul	$1.60
Mayville, Wis.:	
Minneapolis-St. Paul	$2.20

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	24.5 cents
Philadelphia	23.0 cents
Boston	27.0 cents
Buffalo	21.5 cents
Baltimore	22.5 cents
Cleveland	17.0 cents
Cincinnati	23.0 cents
Chicago	27.0 cents
Detroit	23.0 cents
Minneapolis and St. Paul	49.5 cents
Denver	$1.09
St. Louis	33.5 cents
New Orleans	38.5 cents
Birmingham	56.5 cents
Pacific coast (all rail)	$1.25
Pacific coast (tin plate)	1.25

IRON MILL USE

Angle bars, iron, Chgo.	39.00
Angle bars, steel, St. Louis	30.75 to 31.25
Angle splice bars, St. Louis (iron)	37.50 to 38.00
Arch bars, transoms, Chgo.	45.50 to 46.50
Arch bars and transoms, St. Louis	44.00 to 44.50
Busheling, No. 1, Cleveland	29.00 to 30.00
Busheling, No. 1, Buffalo	29.00 to 30.00
Busheling, No. 2, Buffalo	21.00 to 23.00
Busheling, No. 1, Pittsburgh	32.00
Busheling, No. 1, Cincinnati	25.00 to 25.50
Busheling, No. 1, Chgo.	29.00 to 29.50
Busheling, No. 2, Chgo.	19.50 to 20.50
Busheling, No. 1, St. Louis	28.00 to 28.50
Cast borings, New York	15.50 to 16.00
Cast borings, eastern Pa.	19.00
Cast borings, Buffalo	18.00 to 19.00
Cast, borings, Cleveland	18.25 to 18.50
Cast borings, Cincinnati	17.00 to 17.50
Cast borings, Pittsburgh	**19.00**
Cast borings, Birmingham	12.00 to 12.50
Cast borings, Chgo.	18.50 to 19.00
Cast borings, St. Louis	17.25 to 17.75
City wrought, long, N. Y.	30.00
Cut forge, Chgo.	31.50 to 32.00
Forge flashings, small, Cleve.	**27.00 to 27.50**
Forge flashings, large, Cleve.	27.50 to 28.00
Forge No. 1, eastern Pa.	27.00 to 28.00
Grate bars, Buffalo	**24.50 to 25.00**
Grate bars, Cleveland	25.50 to 26.00
Grate bars, N. J. points	24.50
Iron axles, Pittsburgh	**46.50**
Iron axles, Cincinnati	43.50 to 44.00
Iron axles, Cleveland	**46.50**
Iron axles, Chicago	**46.50**
Iron axles, eastern Pa.	**46.50**
Iron axles, St. Louis	**46.00 to 46.50**
Iron axles, Buffalo	**45.00 to 47.00**
Iron rails, Chicago	39.00
Iron rails, Buffalo	**36.00 to 37.00**
Iron rails, Cincinnati	34.00 to 35.00
Iron rails, St. Louis	37.00 to 37.50
Iron rails, Cleveland	37.00 to 38.00
Machine turnings, Cincinnati	17.00 to 17.50
Machine turnings, Cleve.	18.25 to 18.50
Machine turnings, Buffalo	**17.00 to 17.50**
Machine turnings, N. Y.	15.50 to 16.00
Machine turnings, Pitts.	18.00 to 19.00
Machine turnings, east. Pa.	19.00
Machine turnings, Birming.	16.00 to 17.00
Machine turnings, Chicago	17.75 to 18.25
Machine shop turnings, St. L.	**17.50 to 18.00**
Pipes and flues, Cleveland	28.00 to 29.00
Pipes and flues, Chicago	27.50 to 28.00
Pipes and flues, St. Louis	26.25 to 26.75
R. R. mch. cast, No. 1, Buff.	**34.00**
R. R. wrgt. No. 1, Buffalo.	**34.00**
R. R. wrgt., No. 1, east Pa.	**34.00**
Railroad wrgt. No. 1 Cinci.	**33.50 to 34.00**
Railroad wrgt., No. 1, Cleve.	**34.00**
R. R. wrought, No. 1, Pitts.	**34.00**
Railroad wrgt., No. 2, Chgo.	31.50 to 32.00
Railroad wr'ght, No. 1, Chgo.	**33.50 to 34.00**
R. R. wrgt. No. 1, Birming.	24.00 to 25.50
No. 1 yard wrought East Pa.	**33.00**
No. 1 busheling wrgt., E. Pa.	**31.00**
Sheet wrought, Pittsburgh	**34.00**
Railroad wrgt., No. 1, St. L.	32.00 to 32.50
Railroad wrought, No. 2	31.00 to 31.50
Wrought pipe, Buffalo	**27.00 to 28.00**
Wrought pipe, eastern Pa.	33.00
Wrought pipe, ungraded, eastern Pa.	**29.00**

IRON OR STEEL WORKS USE

Axle turnings, Cleveland	$24.00
Axle turnings, Buffalo	24.00
Heavy axle turn'gs, E. Pa.	24.00
Heavy axle turnings, Pitts.	24.00
Shafting, New York	35.50
Shafting, eastern Pa.	39.00
Steel car axles, Pittsburgh	46.50
Steel car axles, Birmingham	**30.00 to 32.00**
Steel car axles, New York	**43.00**
Steel car axles, Buffalo	**44.00 to 46.00**
Steel car axles, Cleveland	**44.00**
Steel car axles, eastern Pa.	**46.50**
Steel car axles, Chgo.	**46.50**
Shafting, St. Louis	37.50 to 38.00
Steel car axles, St. Louis	**46.00 to 46.50**

IRON FOUNDRY USE

Car wheels, (iron), Pitts.	**$29.00**
Car wheels, (steel), Pitts.	**34.00 to 35.00**
Car wheels, eastern Pa.	**29.00**
Car wheels, Buffalo	**29.00**
Car wheels, Chicago	**29.00**
Car wheels, St. Louis	**28.50 to 29.00**
Car wheels, Birmingham	25.00 to 26.00
Car wheels, Cleveland	**30.00**
Tram car wheels, Birming.	21.00 to 23.00
Cast, No. 1, Birmingham	24.00 to 26.00
Cast, No. 1, cupola east. Pa.	34.00
Cast, No. 1, Cleveland	32.00 to 33.00
Cast, No. 1, Cincinnati	32.00 to 32.50
Cast, 1, heavy, N. J. points	**32.25 to 32.75**
Cast, 1, machy., N. J. points	**32.50 to 32.75**
Cast, No. 1, Chicago	31.50 to 32.00
Cast, No. 1, Pittsburgh	**32.50 to 33.00**
Cast, No. 1, St. Louis	27.50 to 28.00
Malleable, Cincinnati	**30.00 to 34.00**
Malleable, Cleveland	**30.00 to 34.00**
Malleable, Buffalo	**29.00 to 34.00**
Malleable, Pittsburgh	**33.00 to 34.00**
Malleable, east. Pa.	**29.00**
Malleable, cupola, East Pa.	33.00
Malleable railroad, Chgo.	33.00 to 34.00
Malleable, agricultural, Chgo.	32.00 to 32.50
Malleable railroad, St. Louis	29.50 to 30.00
Malleable agricultural, St. L.	28.50 to 29.00

MISCELLANEOUS USES

Boiler punchings, Chgo.	36.00 to 36.50
Reroll. rails, 5 ft. & ov., Pitts.	**34.00**
Reroll. rails, 5 ft. & ov., Chgo.	**34.00**
Reroll. rails, 5 ft. & ov., E. Pa.	**34.00**
Reroll. rails, 5 ft. & ov., St. L.	**33.50 to 34.00**
Reroll. rails, 5 ft. or over, Cleve.	**34.00**
Rerolling rails, long, Birm.	**37.50 to 38.50**
Locomotive tires, Chgo.	45.50 to 46.50
Locomotive tires, St. Louis	41.50 to 42.00